THE CULTIVATOR:

A MONTHLY PUBLICATION, DEVOTED TO AGRICULTURE.

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THE CULTIVATOR.

TO IMPROVE THE SOIL AND THE MIND.

☞ The first volume of the Cultivator will be reprinted in all the current month, and immediately forwarded to order. The three first volumes will then be for sale, stitched, at 50 cents each, or the three bound in one, at two dollars.

☞ To give, in detail, the proceedings of the State Agricultural Convention and of the State Agricultural Society, we have added eight extra pages to our present number, at an expense of nearly $200.

NEW-YORK STATE AGRICULTURAL SCHOOL.

The election for thirty trustees of this institution is postponed to the 26th of April next, then to be held at the Mansion House, in Albany, at 4 o'clock P. M.

Feb. 15, 1837. J. BUEL, J. P. BEEKMAN, } *Commissioners.*

OUR FOURTH VOLUME

Commences with the present number. We make our grateful acknowledgments to the gentlemen who have interested themselves in extending the circulation of the CULTIVATOR, and respectfully invite a renewal of their kind offices. Putting out of question the contributions of the conductor, of the merits of which it does not become us to speak, we venture to say, there is no periodical of its size which contains more useful matter directly calculated to improve our agriculture, than is to be found in our columns; and there is no periodical which gives so much matter at so small a price—the contents of a volume of the Cultivator being equivalent, by printers' computation, to five ordinary duodecimos, which sell at 75 to 125 cents each. If, then, as we believe, the paper is cheap, and useful, its benefits to the public will be in proportion to the extent of its circulation; and every gentleman may benefit his neighborhood by a moderate effort to enlarge our subscription list, which we are unavoidably obliged to renew annually. We do not desire to press our sheet upon any, to the exclusion of other agricultural journals; but there is a vast space yet unoccupied; and fifty cents a year is a trivial consideration, compared to the advantages which the farmer may derive from the information contained in an agricultural journal. We hope, with the assistance of our able correspondents, to make each number worth half a dollar to the farmer, and we shall do it if he will but resolve to better his condition. We plead not for ourselves, but for the great interest which it is our pride and pleasure to serve. As it has been proposed to make it a penal offence to *receive* bills under $5, we hope it will be found convenient to remit those of a *legal* denomination.

As the Cultivator circulates in all the states of the Union, which embrace a variety of climate and culture, it is our object to render it serviceable to all, rather than to a particular state or district—to treat more of the general principles of agriculture, adapted to all, than of local practices, serviceable only to a few. This must serve as our apology for omiting to publish communications which might be interesting in a local point of view, but could not be interesting to the generality of our readers. The justness of this conclusion will be apparent, from an examination of the following schedule, which shows the extent of the circulation of the Cultivator in the several states:—

New-York,	6950	Delaware,	177
Virginia,	964	New-Hampshire,	140
Connecticut,	835	Kentucky,	165
Pennsylvania,	680	Tennessee,	149
Massachusetts,	656	North-Carolina,	173
Maryland,	617	South-Carolina,	61
Ohio,	544	Georgia,	57
Indiana,	520	Alabama,	41
Vermont,	435	Mississippi,	54
New-Jersey,	460	The Canadas,	166
Illinois,	309	District of Columbia,	42
Michigan,	296	Missouri,	55
Maine,	37	Rhode-Island,	37
Louisiana,	36	Wisconsin,	21
Florida,	4	Scotland,	4

CULTIVATOR PREMIUMS.

To encourage useful competition, and to render the columns of the Cultivator more interesting to its numerous readers, by the publication of the facts which we hope to elicit, we offer the following premiums upon the undermentioned subjects. The essays and statements may be forwarded to us any time during the current year, (post paid) and the premiums will be awarded and delivered at the next anniversary of the State Agricultural Society, on the first Thursday in February next.

1. To the cultivator of the most profitable acre of Indian Corn,	$10 00
2. To do second do.	5 00
3. To the cultivator of the most profitable acre of Ruta Baga,	10 00
4. To do of the second do.	5 00
5. To the like of the best acre of Mangold Wurtzel,	10 00
6. To do of the second do.	5 00
7. For the best directions for making cheese, founded on the competitor's own practice,	10 00
8. For the second best do do.	5 00
9. For the best directions for making and preserving butter, founded as above,	10 00
10. For the second best do do.	5 00
11. For the most satisfactory experiments in harvesting Indian Corn, with a view of determining the loss or gain, by topping, cutting at the ground, or ripening the grain upon the entire stock,	10 00
12. For the most satisfactory experiments in determining the value of apples, as food for farm stock,	5 00
13. For the best plan of a barn and cattle sheds, adapted to common farmers,	5 00
14. For the best essay on saving and applying the manures of a farm,	5 00
	$100 00

The ten dollar premiums will be paid in plate, with suitable inscriptions—the five dollar subscriptions will consist of the four published volumes of the Cultivator bound, and one volume of the monthly Genesee Farmer, also bound. The competition open to citizens of the United States.

Our object in offering these premiums is to obtain and diffuse useful information; hence we shall require, in regard to the crops, a detailed statement of all the expenses, including manure, labor, &c. and of the products, similar to the statement we to-day publish of Mr. Bower's corn crop.

In the dairy business we wish the processes so fully detailed as will enable others to understand and to adopt them—and we should like, unless very inconvenient, to see, and taste, specimens of the products, before we should feel competent to judge of their relative merits—though this is not insisted on.

We also desire, that the number of cows constituting the dairy may be stated, their average product, in butter and cheese, and the extra feed, if any, which they receive. And we desire that where

they are fed for a time with any kind of roots, or apple pomace, the effect which these have upon the quantity of milk be also noted.

The 11th and 12th premiums embrace objects of much interest to our agriculture, and the experiments will require some degree of care and accuracy. The experiments with the corn should embrace half an acre at least—one third of which, taking alternate rows, may be topped, and one third cut up, at the same time, and as soon as the grain has become glazed. The product under the three processes should be measured and weighed separately, both in the ear and after it is shelled—and the value of the forage under each process, and of the labor in performing it, estimated.

The 13th subject will require a drawing and description, and may be made to embrace a wagon house, tool house, and other useful offices.

In reference to the 14th premium, the extraneous means employed to increase manure should be noticed—the mode of protecting it, if any is adopted, from the wasting influence of the weather—the average product from each animal kept in the yard or stable,—and some comparison in the economy of applying it, in a fermented and unfermented state, to corn, potatoes and other hoed crops.

We shall ask for the certificate of a magistrate, where the competitor is unknown to us, that the applicant for a premium is a person of veracity, and that the truth of his or her statement may be depended on.

THE GARDEN.

We consider a good garden not only as contributing largely to the health and sustenance of the family, but as a pretty good indication of the taste and comfort of its inmates. We are desirous, therefore, of contributing all in our power to the multiplication and improvement of these sources of rural enjoyment. Of their various productions, fruits deservedly hold a high rank. The varieties of the pear now in culture, furnish a succession for the table through the whole circle of the year, and always command a liberal price at market. The Vergaleu is usually sold at two to three dollars the bushel, and we have seen it sold at 15 to $17 the barrel; and other varieties, equally luscious, need but be better known to command an equal price. The plum and the peach, where the latter can be grown, are equally desirable for family use, and profitable for the market. The same remark holds good as to grapes, with the further advantage, that they, as well as the plum, may be preserved fresh and fine for winter use, by alternating them, in stone jars, *as stated in our last volume*, with cotton batting or dry cork dust. The smaller fruits, as the strawberry, raspberry, current and gooseberry, are all easily multiplied, form a succession of delicacies for the table for two or three months, and are more or less promotive of health. All these fruits may be enjoyed by the farmer, in superior excellence, without seriously abstracting from the labors of the farm. They may be most of them kept in a dried state, for family use or for market, during the year; and when beet sugar becomes as abundant here as it is now in France, an event which we expect ere long to see realized, preserved fruits may become as common with our farmers, and be made to contribute as largely in our bills of fare, as they now do in some parts of the eastern continent.

The season for transplanting, and for propagating by grafting, layering and by cuttings, being at hand, some remarks upon these processes will not be considered impertinent, and we trust not unprofitable.

The first step is, where scions are to be employed, either as grafts or cuttings, to secure the desired varieties without delay. They should be separated from the parent stock before the buds begin to swell. They may be transported to any reasonable distance, and kept till wanted for use in a cellar, or with their butt ends well plunged in earth. The larger fruits my be propagated by grafting or layering; the grape, current, quince, and gooseberry, by cuttings.

As we have, in our second volume, given partial directions for grafting and layering, with cuts illustrative of these processes, we shall avail ourselves of the labors of Prof. Rennie, in explaining more fully the scientific principles upon which they depend for success.

"SCIENTIFIC PRINCIPLES OF TRANSPLANTING.

"The removing of growing plants from one part of the garden to another is done for various reasons, and the science of transplanting will consequently depend on the intention of the gardener in the operation. The principle facts to be recollected are, that every plant takes its food by the tips of the root fibres, and that the sap thence carried up into the leaves has much of its water and oxygen carried off by exposure to light, particularly to sunshine. It follows that if part or all of the tips of the root fibres be broken off or bruised, the plant will be kept hungry or starved, just as an animal would be, with its mouth much injured or blocked up; while if a plant in such a state is placed in the sunshine, the water and oxygen carried off thereby will very soon cause it to flag, wither and die.

"TRANSPORTING.

"If the gardener's object then be simply to move plants from one place to another, without affecting their growth in any way, it will be important to preserve every root fibre entire; and even, where this can be done, to take it up with part of the soil in which it has been growing, or with a large ball of earth, as it is termed. Where this cannot be done, the root fibres ought to be placed in their new station as nearly as possible in the manner they were at first, and hence dibbling, where the soil is at all stiff, will be bad practice, from its being certain to confine and crush the root fibres within the walls of the dibbled hole.

"If it be found impossible to preserve the root fibres from injury, or to replant them exactly as they were, then, in order to diminish the loss of water and oxygen, the plants ought to be shaded from the light, or, if that cannot be done, they ought to have a suitable proportion of their leaves [applied to annuals] or branches cut off. De Candolle says this practice was wont to be so universal upon the continent, that the gardener's maxim was, 'if you plant your own father you must cut off his head.' Sir Henry Stewart has proved the bad science of such universal barbarity."

"It is important not to plant the roots too deep, so as to be out of the reach of air, or too shallow to expose them to drought." If the holes are made sufficiently large and deep, so as to have the roots surrounded, when the plant is in its place, by well pulverized surface mould, a tree should not be planted more than an inch deeper than it stood in the nursery. The object in transplanting cabbage, broccoli, &c. is, by checking their growth, to throw them earlier into flower or head. Trees are frequently transplanted, in their young state, by nurserymen, purposely to abridge their long roots, and to increase their root fibres. They are therefore in the best condition for final planting, after they have been one year transpianted, and done well in the nursery. They are then removed with nearly their entire roots.

"SCIENTIFIC PRINCIPLES OF STRIKING.

"By certain experiments, not by any means praiseworthy, yet, beyond all question, correct, it has been proved that, if the head of a snail, or earth-worm, be cut off, the body will not only live for a considerable time, but a new head will be reproduced, with a mouth capable of taking food. By similar experiments it has been found that the legs of spiders, and the feet of frogs, when cut off, are reproduced.

"Upon a similar principle, when the roots of certain plants, which are to them what the head is to animals, are cut off, new roots may, under peculiar circumstances, be reproduced. The chief condition required for the reproduction of such roots, is the preservation of their life till the roots have time to form, and various expedients are resorted to with this view, as well as for the quick production of the roots."

STRIKING BY LAYERS.

The common mode of striking by layers, is to select a branch, to slit, tongue, or cut it half through in a direction sloping upwards, or to take off a ring of bark, or pierce it in several directions by a brad awl, or twist a wire round it,—to bury the part operated upon in the earth, leaving the point above ground and to fix it in its place by a crotched stick. The descending pulp, otherwise called elaborated sap or cambium, is stopped short by the cut, in its passage towards the root, root buds are formed by it, which soon send out roots into the moist earth, and when these are deemed strong enough to feed the plant, the branch is cut off a little below, and the tree in miniature is ready for planting out. The soil should not be too damp, lest the cut part cankers. [See directions and cut at page 29, vol. iii.]

"SCIENTIFIC PRINCIPLES OF GRAFTING.

"When the finger is cut with a knife, the blood vessels soon after contract their cut extremities into an opening so narrow, that the thicker and red part of the blood cannot pass, and the bleeding therefore ceases. But even then there oozes out the thin watery part of the blood, consisting chiefly of matter the same or similar to the white of an egg, which being thus separated from the rest of the blood, thickens by the heat of the body, as the white of the egg does by

boiling. If the lips of the finger-cut accordingly be kept close together by sticking plaster, they will become united by means of this natural glue, or serum, in little more than a day. Upon the same principle, I once succeeded, as others have done, in managing to unite the whole up-joint of a finger which a boy had chopped off by machinery; and experiments have been successful in causing the spur of a cock to unite and grow upon his comb.

"It is upon similar principles that the science of grafting is founded; for if a young branch, like the boy's finger, be taken off by a clean cut, and the cut extremities immedidately joined, the descending pulp will thicken like the watery part of blood, and while it remains soft, the sap from the cut end of the sap vessels will force its way through to their continuation above in the cut slip, which, if the process be successfully managed, will grow as well, or nearly, as if it never had been cut.

"If again, instead of applying the same cut scion to the part it was cut from, a scion from another tree be applied, as if I had applied to the boy's finger the tip of another boy's finger, chopped off by the same accident, there seems no good reason to doubt that a similar healthy joining might, by care, be effected. In the case of animals, indeed, such joinings are rare, because rarely tried; but in garden plants they are exceedingly common, for the purpose of continuing esteemed varieties of esteemed fruits and flowers accidentally produced by cultivation, as well as for forwarding the fruiting of young trees—since seedlings require years to arrive at a bearing state.

"On examining the joining of a graft about a fortnight after it has been made, I have found, as in a healing finger-cut, a number of small roundish grains, in form of a thin layer, produced from the thickening of the pulp, and destined to form the hard substance termed the callus, which in general projects a little externally, and the scar differs in appearance from the other parts of the bark. It is, however, only in the space between the pulp-wood and the bark that the uniting substance is formed, and therefore it is evident that the slip to be grafted must have this part applied to the same part of the stock, and, if these differ in thickness, at least to one side."

"One of the most obvious principles of this process is, that the scions to be grafted should be alike, or nearly alike, because, in that case, the arrangement of the sap and pulp vessels being similar, their cut ends will more readily apply mouth to mouth, and less obstruction, or interruption of the circulating juices will take place.

"To this principle there is an exception, arising from the peculiar design which the graft is intended to fulfil. When the design is to increase fruit bearing, the stock may be of finer texture than the cutting, as when a peach cutting is grafted on a plum stock, which having narrow vessels, a part of the descending pulp is stopped short, and seems to strengthen the branch. If it be intended to increase the branches and leaves on the other hand, a plum cutting grafted on a peach stock might probably do so, by allowing the ascent of more sap.

"BINDING OF THE GRAFT.

"When the joining has been made by cutting and properly fitting the bark of the slip to the bark of the stock, at least on one side thereof, it must be bound so as to prevent this junction being deranged. This is usually done with a ball of three parts of clay, well worked with one part of fresh horse droppings, and a little finely chopped straw, the whole about an inch thick, and two inches or more in length, being tied with a ribbon of bass."

"The principle upon which this is done, is to prevent the oxygen of the atmosphere from getting to the fluid pulp at the joining, where it would unite with the carbon, and form carbonic acid gas, and thereby rob the pulp of its solidity. The exclusion of light is necessary on the same account, for, as in the case of a finger cut, the oxygen would unite with the carbon, and prevent the thickening of the matter from the blood. On the same account, moisture, by supplying oxygen, would be injurious; and dryness might act both by exhausting the pulp, and by causing the edges of the bark to shrivel and gape, which would facilitate the entrance of the air and its oxygen." [For the particular modes and process of grafting see p. 18, vol. ii. of Cultivator.]

PRUNING.

We have been the constant advocate for summer, instead of winter pruning—of pruning after the leaves have expanded, and the limbs have nearly or quite completed their vernal growth, in preference to pruning when trees are leafless, and the growth dormant. We have done so because we considered it most rational in theory, and have found it more beneficial in practice. As it is the general practice to to prune fruit trees at this season, we will recapitulate the reasons which have influenced our practice.

1. Winter pruning causes an increase of spray, or weak limbs, which it is the object of the cultivator to lessen, in order to admit the light, heat and air into the head of the tree, to perfect and mature the fruit. On this point we quote Prof. Rennie.

"The head or branches," he observes, "will always be in proportion to the roots, and the food with which they are furnished. It will therefore be obviously preposterous to dream of checking the luxuriance of a tree, by cutting out its branches in autumn or winter; for no sooner does the sap begin to flow in spring, than fresh branches will arise from the strongest branch buds below where the pruning was made, and the same quantity of sap being furnished, the tree will very soon be as luxuriant as before the operation. Frequently it will be more so, for the pulp laid up in the roots the preceding autumn will be more apt to cause new root fibres than in an unpruned tree. So true is this, that weak old trees are often headed down to render them luxuriant; though the same gentlemen will also extensively top luxuriant trees in winter, with the hope (certain to be frustrated) of checking their growth. Summer pruning, however, has a different effect; and when young shoots and suckers are thinned off in summer, they prevent a tree from exhausting itself." —*Alphabet of Sci. Gardening.*

2. Winter pruning leaves to the sun and winds, at the worst season of the year, and for a long time before the healing process can commence, the wounds of the amputated branches. The cut part either dries and checks, making a lodgement for rains, and causes disease and death, or the sap exudes from the wound, producing canker and corroding the bark.

3. Both of these evils are averted by summer pruning. New sprouts are seldom thrown out, and the diminished flow of pulp, or elaborated sap, is expended in healing the wounds, by covering them entirely, or the edges, with new wood, and in the formation of buds.

It should be borne in mind, that light, heat and air, are all necessary to develope the excellence of fruit. Without their co-operation fruit neither attains its natural colour, consistence nor flavor. Light is necessary to give substance, hardiness and colour. Heat is indispensible to the active circulation of the sap and the formation of sugar, or the principle of flavor. And air is necessary in modifying the sap while undergoing the elaborating process. Hence the utility of exposing fruit to the influence of these agents, by thinning the wood upon fruit trees. In the apple, especially, it is advisable to train its top in the form of an inverted funnel, by cutting out the leading upright shoot, as soon as three or four arms or branches, at a proper height, are sufficiently advanced to receive and elaborate the sap coming from the roots. Upright wood does not produce fruit like that which inclines, or grows nearly horizontal. So that taking out the leading stem not only produces more, but better fruit. As leaves are as necessary to the formation of roots, as roots are to the formation of leaves, in pruning, one-third of the stem should at least be left untouched by the pruning knife.

FACTS IN AGRICULTURAL SCIENCE.

ANALOGY BETWEEN ANIMAL AND VEGETABLE NUTRITION.

Animal and vegetable matters constitute the food of animals and vegetables; yet these matters nourish neither the animal nor the vegetable, until they have undergone certain preparatory processes, and are reduced to a fluid state. Solid substances, so long as they remain solid, can benefit neither.

The soil is to plants what the stomach is to animals—the recipient of food—where it undergoes its first process of preparation, is broken down and blended with a solvent liquid.

The spongeoles, or small roots of the plants, like the lacteals in the animal, take up the digested food, and send it to the leaves, as the lacteals do to the lungs, for its perfect preparation as food.

Leaves are to plants what lungs are to animals—the organs of respiration. The lungs retain oxygen and give off carbon. The leaves part with oxygen and inhale carbon, when the sun shines upon them, and imbibe oxygen when it does not. Leaves are, in summer, as necessary to the health and growth of the vegetable, as lungs are to the health and growth of the animal.

Heat, air and water are essential in all the processes of nutrition, vegetable as well as animal.

The ordinary temperature of the animal stomach is 98°—hence animal digestion does not abate for want of heat. The decomposi-

tion of vegetable food, in the soil, ceases when the thermometer sinks below 40°, and is most active at the temperature of 80°.

Neither lungs nor leaves can perform their office healthfully, without access to fresh air; nor can decomposition take place without air.

Water is a necessary solvent in the preparation of vegetable and animal food for the delicate mouths of the lacteals and spongeoles, and is no less indispensable as a medium of transmitting the food to the lungs and the leaves, and from thence through the animal and vegetable structures.

After the blood of the animal has been perfected in the lungs, it is conducted, by minute arteries, to every part of the body, and is transmuted into flesh, &c. After the sap has been elaborated in the leaves, it is conveyed, in like manner, to every part of the plant, and is then converted into wood, fruit, &c.

Vegetables, like animals, may be injured by an excess of food; and when food is too concentrated, or too rich, the lacteals and the spongeoles become clogged, and unfitted to transmit aliment to the lungs or the leaves.

A seed may be compared to an egg. One contains the germ of a chick, the other the germ of a plant. Nature has provided in their envelopes the food proper for both, in infancy, and until they can provide for themselves. Through the agency of heat and air, the chick becomes animated, grows, and bursts its shell; and the seed germinates, grows, and bursts the earth. Both seem to require the exclusion of light.

The elementary matters found in animals and vegetables are nearly the same—the animal contains the most nitrogen, the vegetable the most carbon. Lime and iron are found in both.

And in both, the power and the habit exist, of throwing off, through their excretory organs, matters, blended with their food, not fitted to their wants, or not assimilating with the elements of their structure. Plants often exhale, or give off, like some animals, a strong odor.

As weeds are more commonly natural to the soil than cultivated crops, they are grosser feeders, and consume more food than the latter. Hence they should not be permitted to rob the crops.

MANURE.

HOW MUCH SHOULD A FARM PRODUCE?

In estimating the value of crops, and of stock, to the farm, the European farmer asks, "What manure will they give?" as among the prominent matters of consideration; for manure there, as it is every where, is the prime source of a farmer's profit. To induce our readers to think on this matter, for then they will act, we submit some estimates of the quantity of manure which animals and crops are respectively made to produce.

Dr. Coventry, late professor of agriculture, in the Edinburgh University, estimated, that upon medium soils, and in ordinary years, the average weight of the straw of wheat, barley and oats, per acre, would amount to 21 cwt—rye from one-fourth or one-third more;—"that supposing this dry straw to be moistened and rotted, it would thereby gain an addition to its weight of at least two-thirds, or between three-fourths and two-thirds of its gross weight—thus producing about 3½ tons of manure; and admitting that some corn is consumed in the feed of horses, as well as that the refuse of the grain, the chaff and light corn, besides the straw, go ultimately to the dung heap, one cannot reckon the amount of putrescent manure gained from an acre of such produce at more than four tons."—Though the Doctor's estimate is judged rather high, when cattle are fed only upon dry forage, it appears from the estimates of many eminent farmers, that one ton of straw, when augmented in weight by the dung and urine of turnip-fed stock, will, if properly managed, produce about four tons of farm-yard dung. A Berwickshire farmer, as stated by Sir John Sinclair, gives a single cart load of turnips per day to eight or ten cattle in the straw yard. He finds that, on an average for three years, from 2½ to 3 acres of straw will winter one of those oxen—no hay being fed—and in this way each acre of straw will produce about four cart loads of dung, each containing from 30 to 35 cubic feet. Meadows that cut 1½ tons of hay, are estimated to give 6 tons of manure per acre; clover, the first year, 6 tons, the second year 5½ tons; and that tillage and grass land, "without assuming any extraordinary degree of fertility or management, should yield, upon an average, at least 4 tons of manure per acre; to which, if be added the extraneous substances which may, with due care, be collected without expense from the roads, the ditches, the ponds, and from refuse of every kind about the house and premises, the acreable amount should be amply sufficient for a full supply of manure once during every course of the four year system of husbandry." Dr. Coventry, in estimating the quantity, has reference to common farm-yard dung, embracing the litter from the different offices, so far rotted as to be easily divisible by the dung-fork, and so dry as to have in it moisture only about two-thirds, or perhaps a little more, of its whole weight, and to be immediately applicable to the land.

"When cattle are well littered, and fully fed with turnips, it has been usually found, that about twelve of them will yield a one horse cart load of dung within 24 hours; but that quantity will scarcely be produced by 16, or even 18, if kept only on straw, with a small allowance of turnips." Here then is a fact worthy the farmer's notice: the turnip crop adds one half to the meat, end one third to the dung, of the farm. "It has been calculated that an acre of good turnips, with an adequate proportion of straw, will make upwards of 16 cart loads of dung;" but considering 10 the average, two acres will suffice to manure one. Arthur Young, with 6 horses, 4 cows and 9 hogs, which consumed 16 loads of hay, and 29 loads of straw, obtained 118 loads of dung, 36 bushels each. The cows and lean swine ran loose in the yard, and were fed in cribs; the horse stables and fat-hog sties were cleansed into the yards. Forty-five oxen, littered, while fattening, with 20 wagon loads of stubble, are said to have produced 600 tons of rotten dung. The value of dung is always in proportion to the nutriment contained in the food—the richest food producing the richest manure.

We intend soon to notice the extraneous matters which are available to farmers for increasing their dung heaps, and to offer some remarks on its application to the soil. In the mean time we will close this article by giving the rule for depositing dung in the field, previous to its being spread, so as to equalize it according to the quantity applied. By calculating the solid contents of the manure in cubical yards, each containing 27 bushels, and dividing it by the number of heaps, the exact quantity to be laid in each heap may be correctly ascertained. As for example—we wish to apply 20 loads, of 27 bushels each, at 5 yards distance, the number of heaps, as indicated below, will amount to 193—divide the total number of bushels—20+27=540—divide by the number of heaps,—193—and shows that each heap should contain 2.79 bushels.

No. of heaps at	5	yds.	193 per acre.
do	5½	do	160 do
do	6	do	134 do
do	6½	do	114 do
do	7	do	98 do
do	7½	do	86 do
do	8	do	75 do

BADEN CORN.

We have received from H. L. Ellsworth, Esq. of the Patent Office, Washington, a sample of corn, which is stated to produce from four to eight ears on a stalk. This corn was raised by Thomas N. Baden, near Nottingham, Prince George, Md. Mr. Baden began *twenty-three* years ago, to select his seed from stalks bearing two good ears, and he has continued to select from the best and most prolific stalks. For some years he did not discover much improvement; at length the quantity and quality began to improve, and the improvement was then very rapid. The corn is planted five feet apart each way, and two stalks left to grow in a hill; and the product, thus planted, has amounted to 120 bushels on an acre. This variety cannot but be a great acquisition at the south; and it may be so in the north, though we doubt whether it will ripen early enough in this climate. Gen. Porter, of Black Rock, informs us, that he last year raised some, identical, we think, with that we are noticing, which *did* ripen. We intend to publish the letters of Messrs. Ellsworth and Baden in our next, if our limits will permit.

The experiment of Mr. Baden is a strong corroborative proof of the correctness of the opinion of the late Joseph Cooper, that our farm crops may be improved upon the same principle that we improve our farm-stock—*by using only the best seed.* Many of our best varieties of grain have originated from a single stalk of superior excellence, saved by the careful farmer. This was the case with the Houpton oat; and we have just purchased a barrel of oats, weighing over forty pounds to the bushel, which have sprung from a single stem, grown in a field of barley, in Oneida. The difference in the varieties of grain, to the farmer, are immense. Had the corn crop

of the north, the last summer, been wholly of the early Dutton variety, and planted early and upon dry ground, we doubt not it would have added a million of dollars to the value of our farm crops. The subject is one of great interest to the community, as well as to individuals, and every intelligent farmer should endeavor to improve both his vegetables and animals, by propagating only from superior samples. We cannot but notice the coincidence in the experiment of Mr. Baden, and that of Van Mons, in obtaining new varieties of the pear, and the *perseverance* in efforts to improve which both suggest. Mr. Baden perceived no great improvement *till after several years.* Dr. Van Mons, in his efforts to obtain improved varieties of the pear from seeds, did not expect success *before he reached the sixth generation of seedlings.* They both *did* succeed.

While we thus urge farmers to endeavor to improve their animal and vegetable products, by propagating only from the best, they are to bear in mind, that the ultimate product and profits of both, will depend in a great measure upon the manner in which they are fed and tended. Neither a short-horn cow, nor a Leicester sheep, nor a Berkshire pig, will fatten without food. Their intrinsic value consists in making a greater return of meat, when well fed, from a given quantity of food, than is made by inferior breeds. So with crops. The Dutton and the Baden corn will neither of them give one hundred and twenty bushels to the acre, unless the soil is rich, and the crop well tended. Manure feeds and makes the corn, as the forage feeds the animal and makes the meat. Neither the animal nor the vegetable can manufacture forage and dung into meat and grain, unless it is placed within their reach. The Dutton and Baden corn, like the improved animals, are valued for the economy with which they convert food into solid grain, and the former, also, for its early ripening.

The silk business.—There is at least one substantial objection against attempting to raise two generations of silk worms in a season, viz. that it tends to kill the trees. If the mulberry will bear to be stript of its leaves once, it will not bear to be served so repeatedly, in the same season; and if there is a sufficiency of trees for two crops of silk, it is best to double the number of worms in the first; for the young leaves of spring are better for young worms than the old leaves of summer. Leaves make roots as well as silk; they are necessary to the life of the tree, and unless the leaves perform their office to the roots, the roots will soon cease to perform their office to the leaves. There is a mutual dependence between them. We have seen from the parliamentary reports of Britain, that children there are made to perform, in factories, 12 to 16 hours labor in 24, no doubt to the profit of the owners; and we have seen that these poor children become diseased, and ruined in their constitution, by reason of this violation of nature's laws—which ordain rest to the child, and leaves to the tree. Her laws cannot be violated with impunity, either in the vegetable or animal kingdom.

On cutting cattle food.—A diversity of opinions exist among some of our correspondents, as to the length which hay and straw is most advantageously cut for horses and cattle—one party contending that an inch is short enough, and the other that it is not. We incline to the former opinion, and we would respectfully offer our reasons.—The object in using the straw cutter is to prevent waste, and to facilitate the process of mastication. It is not enough to get the food into the stomach, but it should go there in a proper condition for easy digestion—in a perfect masticated form, the fibre broken down, and intimately incorporated with the saliva of the glands. It is uniformly enjoined upon persons who are sickly, or have weak stomachs, and it is a common admonition to the hale, to eat slow, and to chew well their food before they swallow it, that it may more readily digest. And we see that cattle, high fed with corn and oats, often void the perfect grain, without its having benefitted them a particle. Whether this would not be more or less the case with fine cut hay, we cannot judge from observation, but we are told it would be so.—There is another difficulty to be apprehended from short cut food, if given to ruminating animals, as cattle or sheep, which chew the cud—that they would be very liable to lose this indispensable requisite to health. At all events, there can be no doubt, that all solid food should be perfectly chewed, and mixed thoroughly with saliva, before it passes to the stomach of the animal—the grain crushed, and the fibre of hay and straw broken by the teeth. To ensure this we doubt whether forage should be cut shorter than an inch, or an inch and a half. A gentleman who had fed largely with very fine cut hay, found that much was voided in an undigested state, tinged with blood from the intestines, and that his cattle, after a few weeks, ceased to thrive.

Cob Cracker.—We are inquired of, by a correspondent in Maryland, in relation to a machine for crushing, or grinding, corn and corn cob, by manual or horse power. We have seen these machines that were propelled by water power; but we know of none now in our vicinity, and regret that it is not in our power to satisfy our correspondent's inquiries.

The practice is gaining ground among our best farmers, of employing a portable horse power for various farm purposes,—as threshing grain, grinding apples, coarse grain, sawing wood, slitting boards, cutting cattle fodder, and turning the grindstone—and it may also be applied to the crushing of corn cobs. The expense of adjusting all these operations so as to be performed by a portable horse power, can be no serious obstacle upon a large farm, where most of these operations are necessarily carried on,—whilst it must be much more than counterbalanced by the saving in time and labor incident to managing them by manual power. We have had described to us this kind of economical arrangement; yet we are not enough familiar with the details to justify us to lay down the plan, to state the details, or to give an estimate of the cost. We should be very much obliged to any gentleman who has adopted this arrangement, or to the mechanic who has fitted up the machinery, for a communication upon this subject. There are several models of horse power adapted to the purpose, as also threshing and cutting machines, grinders, crushers and saws. The desideratum is to select the best of each, and to arrange them for use in the most convenient and economical way.

"*Long manure.*"—Vegetable and animal matters, when brought into a state of fermentation, by the agency of air, heat and moisture, immediately give off carbonic acid gas, which, if confined beneath the surface of the soil, will become mixed with the moisture there, and be taken up by the roots of plants. And what is carbonic acid gas? It is composed of two parts of oxygen, a constituent of atmospheric air, and one part of carbon, the principal constituent of plants, rendered volatile by the heat of fermentation. It is the digested food of plants; it becomes incorporated with water in the soil; is taken up by the spongeoles or roots of plants; transmitted through the sap vessels to the leaves; is there decomposed by the sun's rays; the oxygen passes into the atmosphere; the carbon passes down through another set of vessels, and being gradually disengaged from the water which conveys it, by evaporation, it becomes a solid substance of the plant. Carbon constitutes principally the structure of the stems, branches, and roots of plants, and it can only find access into plants in a fluid state, combined with oxygen. From this view of the matter, the reader will understand why we recommend long manure for hoed autumnal ripening crops,—and why we insist that one half of the value of cattle dung is lost by suffering it to be reduced to the condition of short muck before it is buried in the soil. All vegetable matters contain more or less carbon; and carbonic acid gas is invariably produced in the fermenting and putrifying processes.

Indian corn crop.—We publish to-day a very interesting communication on the culture and profits of a corn crop, from H. Bowers, of Northampton, Mass. It affords a good illustration of the advantages of improved husbandry—scarcely any part of the culture, or of the harvesting, being managed in the old way. The species of corn grown is the same that we have cultivated for a dozen years, and is the same which has been highly commended by Judge Lathrop, of Springfield, and other cultivators. It has never been injured by autumnal frosts in our grounds, ripening and being harvested before their occurrence; and in 1828 the crop being in the crib the first week in September. We harvested last year a few days earlier than Mr. Bowers, and made, as our southern friends say, from our limited culture, about 200 bushels of prime seed ears.

Dung.—It is common, at this season, to haul to the fields, the dung destined for the spring crops. Fermentation and waste often ensue before it is buried in the soil. To avoid this loss—we allude to unfermented dung—the dung should be laid in compact piles, of not exceeding eight loads, where most convenient to be distributed, and, as soon as the ground becomes thawed, covered with six or eight inches of earth, and the surface smoothed with the spade. The ma-

nure will seldom ferment before the ground thaws. The earthy covering imbibes the gaseous matters, and protects the dung from the wasting influence of the weather. When crops are dunged in the hill or furrow, with long manure, the dung sometimes fails to rot, for want of moisture to bring on fermentation, and is consequently of no benefit to the crop. When the dung is spread broadcast, and ploughed under, this difficulty never occurs, and the dung becomes better incorporated with the soil.

Brooks' Silk Spinner and Twister gave great satisfaction to all who saw its performance, and it stands highly commended in the proceedings of the Agricultural Convention. With it a woman will convert half a bushel of cocoons into sewing silk in a day, or into twist, or into single, double or threble threads, of any required fineness. The machines will be kept for sale at W. Thorburn's—price, for family use, thirty to forty dollars.

FACTS IN THE SCIENCE OF AGRICULTURE.

BY PROFESSOR RENNIE.

Lime.—If quick lime, either fresh burned or slaked, be mixed with moist vegetable substances, however hard and fibrous, it soon destroys their texture, and forms a mixture, the greater part of which can be dissolved in water, thus rendering what was previously useless, fit for the food of plants. [Hence the utility of applying quick-lime to reclaimed swamps, or other soils abounding in woody fibre.]

On the other hand, it is injurious to mix quick lime with vegetable substances already soluble in water, or with any sort of dung, or other animal manure, lest it should take up too much humic acid.—[Humic acid may be termed the *essence of dung*, combined with oxygen.]

Sugar and gluten.—There are few plants that do not contain sugar, which chemists have shown to be a compound of about three parts carbon, four parts oxygen, and eight parts of hydrogen.

It would follow, therefore, that it is not necessary to be introduced into the soil in the state of sugar, the constituents being always more or less contained in the water, and most probably combined into sugar after entering the system of a plant. This applies also to starch, which is composed on the same principles, and may indeed be converted into sugar, as was lately discovered; and gluten differs only in containing nitrogen. [Gluten is the substance which imparts nutriment to wheat in a greater degree than is possessed by other grain.]

Flavor, color, &c.—All flavor, color, smell, and nutritive qualities, depend for their production chiefly on the action of light. The red color of forced rhubarb, [and of the blood beet,] which seems to be an exception, arises from the red matter previously produced by the agency of light being carried down to the root. [Hence celery is blanched to divest it of its otherwise acrid taste—and hence fruits growing in deep shade, are more vapid and colorless than those growing in an open exposure.]

Heat.—The soil of this country, below where the frost usually penetrates, averages a temperature of 48 degrees, or fifteen degrees above freezing, which is the reason why springs do not freeze, and not any quality in the spring water, which will freeze readily enough when taken from the well. [And this explains why spring water, retaining always near the same temperature, appears cold in the heat of summer, and warm during the cold of winter.]

Radiation is the spreading of heat, which arises from heat passing from a hot body to a colder one near it, as uniformly as water runs down a slope. This spreading of heat takes place between the surface of the ground and air; and when the air is cold, though the soil be warm, it soon loses its heat, and dew or hoar frost is formed on the grass, by the moisture diffused in the air, though previously invisible, becoming condensed or frozen. But when the sky is covered by clouds, this spreading and loss of heat is, in a great measure, prevented, and hence there is no dew or hoar frost on a calm cloudy night. It is on this principle, that garden plants are protected by matting, which stops the heat of the soil from spreading about and being lost in the air. Dr. Wells proved this by stretching a very thin cambrick handkerchief, two feet square, six inches above a grass plat; and he found on one night, that it was five degrees warmer under the handkerchief than on the rest of the grass plat; and on another night, there was eight degrees of difference. The screen should not touch the soil, or the plants to be protected. In this case it might carry off heat by conduction.

It is on the same principle that snow affords a protection from the severity of frost, the plants under snow having been found, by Dr. Darwin, to indicate forty degrees, that is eight degrees above freezing; hence some alpine and Siberian plants, do not bear exposure to frosts when unprotected by snow, so well as those which are natives of a warmer clime.

A reason for a slope or a hill being warmer than a valley, is that cold air being heavier than warm air, the coldest air always rolls down to the lowest situation; but if there be a brisk running stream in a valley, it will prevent, in some measure, the stagnation of cold air; injurious, because the greatest cold always occurs in air having the least motion. Prof. Daniel says he has seen a difference of 30 degrees on the same night, between two thermometers, one placed on an elevation and another in a sheltered situation. Daniel also states, that the same surface which, in a calm state of the air, would give off 100 parts of moisture, would yield 125 in a moderate breeze, and 150 in a high wind.

COMMON SCHOOLS AND THE SURPLUS FUND.

It seems to be the fashion of the day with all parties—and fashions run as rampant in politics as they do in dress,—to throw all our surplus means, even the millions of the surplus revenue, into the common school fund. It is not our province, nor our intention, to scan motives, yet it is our privilege to examine the policy of the proposition; and this we propose now to do.

The annual distribution of the interest of the common school fund now amounts to 110 to $120,000 per annum, and constitutes nearly one-half of the monies expended in the state, annually, for the pay of common school teachers. The distribution of this money has produced the effect originally designed: it has led to the establishment of schools, and to their maintenance, for at least a portion of the year, in all, or nearly all, of the school districts in the state, and it has placed within reach of the poor, as well as the rich, all the benefits of these schools. Now the question at issue is, whether another like appropriation, applied in like manner, would tend materially to increase the usefulness of these schools,—or whether it would not, on the contrary, by relaxing individual exertion, the material stimulant to improvement, tend to diminish their benefits, and deteriorate them in character. So far as these means can be applied to improve the qualifications of teachers, and to raise the standard of instruction, by furnishing suitable books and apparatus, and manual employments, so far they may be profitably applied; but these would require but a small part of the amount proposed to be added to the fund, and would not be likely to become objects of expenditure, unless appropriations are specifically made for them. The son who depends upon a rich father for suppport, and who from this expectancy, is allowed to follow the natural bent of his inclination in pursuit of pleasure, too often becomes a useless member of society; while the child of the poor parent, who has to rely wholly upon his personal exertions for character and fortune—and who bends to this noble purpose, from necessity, the powers of his mind and body, not unfrequently rises to the highest scale of usefulness. We fear, that by too lavish an expenditure, we should sink our school districts to the condition of the rich man's son. Men do not prize sufficiently the blessings, which, like the dews of heaven, fall upon them unasked; but they ever put a high value upon those which they earn by their own industry. The first cost nothing, and are but momentarily regarded, and as common place matters. But those they achieve themselves, are bought with their personal means and efforts, are highly prized, and ever retain an intrinsic value. The tree that is protected in its growth by the wide spreading and towering pine, is less tough and lasting, than that which has grown up unsheltered and unprotected, in despite of the buffetings of storms, in the open field. The prince and the peasant, as the fable teaches, were cast shipwrecked together upon an island. The latter had learned, from necessity, to provide for himself,—and this provident knowledge enabled him to supply the wants of his helpless companion. The illustration will not be mistaken. Both the man and the tree became more useful from the early habit of being obliged to take care of themselves.

But we will dismiss all metaphor, and reason upon facts—facts of general notoriety, which have transpired, or are transpiring in our day and country.

Our native state, *Connecticut*, was the first state to set apart a fund for the support of common schools; and we believe that this fund is now larger, according to her population, than that of any state

in the union. Has the character of her schools been advanced, or their usefulness been enlarged, by the munificent *public* expenditures for their support? Is her population more wealthy in consequence of the saving which it has enabled them to make, or are they more intelligent than their neighbors? Truth, we are afraid, will respond in the negative to all these questions. We have heard the remark made, by intelligent men of that state, that the public provision for the maintenance of her common schools, has had a tendency to relax the personal exertions of her citizens, and to abate their zeal to improve their condition; that since the legislature have assumed their supervision in part, the people have evinced an apathy in providing suitably for them; and that consequently their improvement has not kept pace with the spirit and intelligence of the age. We do not ask all this concession. We ask, merely, that the character of her schools, and of her population, for intelligence and useful enterprise, may be compared with those of her sister

Massachusetts, who has never had a common school fund, but whose schools have been exclusively supported by the liberal individual efforts of her population. We ask those who advocate the application of all our surplus means, to our common school fund, to point to the advantages which Connecticut enjoys, over Massachusetts, in the character of her schools, or in the beneficial influences which these schools have produced, upon the wealth, intelligence, and moral condition of society. We would point to Vermont, Maine, New-Hampshire, and Rhode Island, as affording further illustration, that the unaided energies of our population are sufficient, and most efficient, in the establishment and maintenance of good schools.

We lack not so much in the *means* of supporting schools, as we do in the *method* and *measures* of instruction. Common schools should teach the *useful* branches of knowledge. We wish our boys not only fitted to discharge their duties to society, in any public capacity to which they may be called, but we wish them instructed in some useful business, by which they can, in manhood, live comfortably and respectably. The period of puberty hardly suffices to acquire, separately, both branches of instruction, to the extent which is demanded by the age. But if studies were more adapted to the duties and business of manhood—if instead of continual change, according to the caprice of every new master, properly selected books, of standard worth, pertaining to the business of life, and calculated to imbue the mind of the pupil with a just sense of his rights, and of his duty to society,—were made class books for the senior boys, and to constitute a district school library, for the benefit of parents as well as children; and if, simultaneously, the boy could be instructed, four to six hours a day, as he could be without detriment to his studies,—in the *practice* of some useful art,—he would come into manhood ripe for usefulness, with a hale constitution, a body inured to labor, habits of application and usefulness, and a mind enlarged and illuminated by science, and devoted to the good of the commonwealth.

How many hundreds may now be pointed out, of liberal education, who are mere cyphers in society, *for want of early habits of application to labor*—how many do we see, degraded by ignorance and venal habits, among the working classes, *for want of the early habits of mental improvement*,—all of which labor schools would tend to form and infix.

The unprecedented progress which has been made by the French nation, in the culture of the beet, and in the manufacture of indigenous sugar, has been brought about by schools of instruction, established by the government, specially to teach the culture, and the process of manufacture, practically and scientifically. M. Iznard, the French consul at Boston, was assigned to the care of one of these schools, established at Strasburgh. Can any one doubt, that the French nation has been amply remunerated, for this outlay of capital, by the annual production of 80,000,000 pounds of sugar from the soil; and the vast improvement which has thereby accrued to her agriculture? We also anticipate great beneficial results from the beet culture, and the silk business, and if these branches of labor are correctly and efficiently taught in schools of public instruction, the advantages to the nation must be palpable and abiding.

The executive has recommended, that the interest of the surplus fund be applied to education, but has left the details to legislative wisdom. We have taken the freedom to point out good reasons, as we believe, why it should not *all* go to the common school fund, and to suggest how a portion of it may be applied, with great and certain public advantage. Without intending to disparage our colleges or academies, of neither of which do we lack in numbers, it is sufficient to say, that they do not all supply what is now most needed—they comparatively teach nothing of science or art to the laboring classes, who constitute the great bulk of our population, and who are our wealth, and our strength. Education is said to be the cheapest defence of a nation; but to be efficient, it must be general—it must be impartial.

"NOTICE ON THE BEET SUGAR,"

Is the title of a pamphlet politely sent us by the publisher, J. H. Butler, of Northampton, and which we have read with much interest. It is compiled from recent French works, by Edward Church, late a resident of France, who has added the result of his personal observation, and we believe of his practice there. It treats fully of the culture of the beet, and of the process of extracting its sugar. Its perusal has confirmed us in the opinion, already expressed, that the culture of the beet, and the manufacture of sugar from it, is adapted to our climate, soil and wants, and that ere long it will constitute an important branch of our national industry. We subjoin a very brief synopsis of the first part, relating to the beet culture, and refer those who design to embark in the manufacture to the work itself.

Variety.—The white Silesian is preferred; the yellow is next in order; because, being smaller, they abound more in sugar, and are more easily kept—though all the varieties afford the saccharine matter. Plants for *seed* should be set three feet apart, and we should add, supported by a stake; and when ripe, the seed should be perfectly dried before it is packed for market or use.

Soils.—Rich deep loams, neither too wet nor dry. From the writer's remarks, the culture seems better adapted to the northern than the middle states, the root containing more sugar which is raised in the north of Europe, than that raised in the south.

Preparation of the ground.—Oats, or wheat [or perhaps corn] manured, to precede, and the ground to be worked deep, and perfectly broken and pulverized.

Manures are recommended to be applied to the previous crop, or in the previous autumn. We will venture to recommend a trial of long dung, well and perfectly buried with the plough, before sowing the crop.

Sowing.—Sow as soon as the ground can be put into good order, say the first to the tenth of May, that if the seed fails, the sowing may be repeated in time for a crop. Seven to eight pounds of seed sown to the acre. It is recommended to sow in drills, to thin the crop, and transplant when necessary—distance between the drills two and a half feet; between the plants one foot or more.

Weeding.—The crop is thrice wed—the horse hoe or cultivator may be employed—the hoe and hands are used by women and children.

Gathering the crop.—The period for gathering known by the leaves ceasing to grow; they become covered with brown spots, are curly, droop, and assume a yellow tint. Should be gathered in dry weather. They are dug with a spade; a boy beats off the dirt, by striking two together, and lays them down in a line; and a third person cuts off the tops with a spade, taking only the extreme neck. They are afterwards collected in piles, and carted to the store house, or buried in pits—if in the latter, the pits are covered with earth to exclude frost, and ventilated in the manner we have recommended for ruta baga.

Water Proofs Boots and Shoes.—From having for several years experienced its efficacy, we recommend the following composition to render boots and shoes impervious to water, with the single remark, that it is enjoined, among the primary rules of health, to "*keep the feet warm.*" The composition is: Tallow, half a pound; hog's lard, four ounces; turpentine, new bees' wax, and olive oil, each two ounces. Melt the materials together by a gentle heat, and rub with the mixture the boots or shoes, upper and under leather, the night before they are wanted. The better way is, to give the boots or shoes two or three coatings of the composition, at intervals, before they are worn at all. We have been days in snow water, in boots thus prepared, without the least inconvenience to the feet.

PRESSING HAY.

We have obtained from A. Van Bergen, Esq. copies of queries addressed to him, and of his answers thereto, relative to the expense and advantages of pressing hay for market, and to the character of Lampman's Patent Hay-Press, which we publish from a belief that they will prove interesting to many of our readers.

Question 1. Is the hay-press you use the best in the country, as

far as you know, or is there any other, *and where*, that can compete with it?

Answer.—The hay-press I use is the best in the country, and in general use. I know of no better.

Q. 2. What is the power required to press the hay? How many oxen, horses, men or boys, are employed in the work, and how many tons will it press in a day?

A. The power required to press the hay is furnished by one horse, (no oxen.) Three men will press from five to six tons per day.

Q. 3. What is the cost of the press, and putting the same up complete, *without the building*? Is it liable to get out of order, and does it require a philosopher to manage it, or can a man of common sense and industry manage and keep it in order?

A. The cost of the press, and of putting it up complete for use, is $150. It is not liable to get out of order, does not require a philosopher to manage it, and a man of common sense can manage it. It is simple in its construction.

Q. 4. Is hay *better*, or *worse*, for being pressed? How long will it keep in good order and condition? Is there any other advantage in pressing hay, besides *the facility of removing it*, and thereby keeping a large quantity in a small space?

A. Hay is not injured by pressing, if packed in good order—will keep any length of time sweet, if kept dry. The advantage of pressing hay, other than keeping a large quantity in a small space, is shipping it to a foreign market, which cannot be done in bulk.

Q. 5. Is there any other suggestion you can make on the subject, that will be beneficial to one ignorant of the business of pressing hay?

A. Care should be taken in selecting the different qualities and kinds of hay in distinct *bays* or *mows*, so as to have no mixture, as timothy hay is most in request and will command a better price in market than finer grasses. I avoid packing clover hay. Hay will lose in weight, if packed in wet or damp weather, and if it is not well seasoned in the mow, will damage in the bale, and mould and mat together. Hay from the meadow will not do to press, unless for immediate use. I season my hay in the mow 60 days, it will then bear transportation to any market. Heavy bales, say 400 to 500 lbs. are preferred by shippers in a small compass, say 24 to 26 feet, as it is frequently shipped by the foot, most generally by the bundle. I send from my farm from 300 to 400 tons to the New-York market, to be sold there or be shipped to a foreign market to my account. I employ men to press my hay by the ton, furnishing them a *horse*, *hook*, *lath*, *nails*, &c. They perform the labor of pressing and stowing the bales in a convenient place in the building in good order—board themselves—at 62½ to 75 cents per ton, or 2000 lbs. I refer you to my son, Peter A. Van Bergen, attorney at law, 122 Nassau-street, who is well acquainted with my mode of pressing hay, who will, with pleasure, give you more information on the subject than now suggests itself to me. He is well acquainted with the building of my presses, and may possibly facilitate your operations in the execution of your press, should you be inclined to put one up.

An excellent Institution was three years ago organized at Boston, called the Boston Asylum and Farm School. The association established their farm school on an island near that city, as an asylum and school of instruction for destitute boys. The third annual report is interesting. The school has 107 boys, probably reclaimed from want and vice, and receiving instruction in useful knowledge, in morals and in labor. They work upon the farm, in the garden, and at mechanical employments, and are instructed in geography, the use of the globes, botany, singing, reading, &c. This is truly an excellent institution, and may be termed a manufactory of useful men from useless boys. We have the raw material in great abundance, in the higher as well as in the lower walks of life; and we rejoice to find a disposition, any where, to convert it into a useful commodity.

STARCH AND SUGAR.

Every plant that contains starch, as the beet, carrot, parsnip and potato, may be made, probably, to yield sugar,—if foreign matters, colour and flavor can be got rid of. The means of doing this it is the province of science and chemistry to discover and apply. According to the analysis of chemists, the elementary matters of starch and sugar are similar, though in different proportions, and starch is readily converted into sugar by chemical process. The sugar of the beet, which France now produces in immense quantities, has naturally, Davy says, a slight bitter taste; but chemistry has enabled us to render it as pure as the sugar of the cane, both in appearance and in flavor. Potatoes contain, according to Einhoff, more than one-sixth of pure starch, and about one-fourteenth of other matter, analogous to starch, and according to Davy, one-sixth to one-seventh of dry starch. The potato yields according to quality, and the analysis of Skrimshire gave from 8¼ to 12 parts of starch in 60 parts of the root. Davy obtained from 1,000 parts of the turnip, 34 of saccharine matter; from 1,000 parts of the carrot, 95 parts of sugar, while the parsnip afforded 90 parts in 1,000, of saccharine matter. The quantity of saccharine matter, or sugar, in 1,000 parts of the undernamed is given by Davy as follows:

Red beet,	121	Carrot,	95
White beet,	119	Common turnips,	34
Parsnip,	90	Ruta baga,	51

These facts show the importance of science in supplying the wants of society, and inculcate the propriety of diffusing its principles and its benefits among that portion of our population who are employed in the acts of labor, and who seem most likely to make it subservient to the public weal.

TILLAGE HUSBANDRY.

We find, in works upon British husbandry, much that is calculated to aid and instruct the American farmer; and much, blended with the useful, that is either not adapted to our climate or our practice. To suit our measure to our cloth, and to discharge our duty in the best way we can, we propose to *abstract*, and occasionally *extract*, such matters as may present in our reading, and as we deem useful, and to add thereto the results of our own experience and observation, wherever we may deem them pertinent. These abstracts, for the present, will relate principally to tillage husbandry.

HINTS ON THE GROWTH OF GRAIN.

CHEMICAL COMPOSITION.

The compounds in vegetables really nutritive are very few; *farina*, or the pure matter of starch, gluten, sugar, vegetable jelly, oil and extract—of these the most nutritive is gluten, which approaches nearest in its nature to animal matter, and which is the substance that gives to wheat its superiority over every other grain. The next in order as to nourishing power is oil, then sugar, then starch, and last of all gelatinous and extractive matters. Sugar and farina, or starch, are however very similar in composition, and are capable of being converted into each other by a simple chemical process.—All the varieties of substances found in plants, are produced from the sap, and the sap of plants is derived from water, or from the fluids of the soil, and it is attended by, or combined with, principles derived from the atmosphere.—*Davy.*

WEIGHT.

The common and standard weights of grain are:—

	Common Weight.	*Standard Weight.*
Of Wheat,	from 58 to 64	60 lbs.
Rye,	49 to 56	56
Barley,	48 to 56	48
Oats,	30 to 42	32
Indian Corn,	54 to 62	56

SEED,

Of every kind, should attain full maturity ere it is sown. The farina in the seed constitutes the nourishment of the embryo plant, as the egg does of the young chicken, until the roots are grown sufficiently to provide for themselves. The farina has become fully developed only when the seed has attained maturity. The more abundant the nourishment in the seed, the more healthy and vigorous the plant which it nourishes. Hence not only ripe, but perfect and plump seed should be selected. A weak embryo is not likely to produce a strong plant; for although the soil abound in food, a healthy vigorous plant will take up much more food than one that is lean and shrivelled. In the Indian corn crop, weak, feeble plants are often perceptible in a hill, which give little or no corn. Hence the utility of putting in a double quantity of seed, that the weak plants may be extirpated, at the first dressing, and strong ones enough left to fill the ground. It is a good plan in regard to seed corn, to put a dozen or twenty seeds in a flower-pot, or some vessel filled with earth, two or three weeks before planting time, to water the earth, and to set the pot in the sun in a window of the dwelling. It will be then seen in time whether the seed will grow, and what portion of it. The importance of select seed has been amply de-

monstrated by the fact, that many valuable varieties have originated from a single ear, distinguished by remarkable properties, and which has been propagated separately.

The time most favorable for depositing seeds in the ground, depends upon their habits and the condition of the soil. Barley, rye, corn and buckwheat germinate best upon a dry warm soil; wheat and oats upon one that is moist. Spring grain, as wheat, rye, barley and oats, should be sown as early as the ground will permit, as the ordinary spring frosts seldom seriously affect them; corn and potatoes, as soon as the season will justify, so as to escape the early frosts. In this latitude the best time for corn is between the 12th and 20th May. Late planted corn seldom matures well, and the experience of late years justifies the early planting of potatoes.—Seeds indigenous to warmer latitudes, as the melon, cucumber, Lima bean, and many other garden productions, should not be sown until the ground has obtained a natural warmth sufficient to ensure a prompt germination.

The depth at which grain should be sown is a matter of some importance, though not enough regarded. Heat, above 32 of Fahrenheit, air and moisture, are all necessary to the germination of seeds. Without heat and moisture, they would remain dormant; with them, and without air, they will rot. All these being present, a seed imbibes moisture through its outward covering, the heat and air convert its farina into a fluid, of milky appearance, and of a sweetish taste, which nourishes the young plant, the root first, and then the stem, till it can provide for its own wants,—which is when the root extracts water, &c. from the soil, and the first leaves elaborate it into food. The conclusion resulting from these facts is, that seeds should be deposited so near the surface as to receive the vivifying influence of the sun and atmosphere, and yet be so covered as to secure to them a due degree of moisture, and to exclude light.—Hence the utility of sowing shallow, to secure the agency of heat and air, and of compressing the earth upon seeds, with the hoe or roller, to secure moisture. Soils differ. Upon porous and sandy ones, heat and air penetrate deeper, and moisture sooner evaporates. Thus a stiff soil requires less covering than a light one. Wheat has two sets of roots; one springing immediately from the seed, termed *seminal*, or seed roots; the other immediately below the surface of the soil, called *coronal* roots. These latter are subject to be chilled and injured by an early frost, and if the seed be not sown at a proper medium depth, the seminal roots may be also exposed to similar attacks; which forms a strong reason for early sowing. Wheat, barley and oats require more covering than rye and buckwheat. The depth may be varied from 1½ to 3 inches.

The quantity of seed to be sown per acre, should be dictated by experience. In Britain, much larger quantities are sown than with us. Much depends upon soil. A rich soil will carry more plants than a poor one; but even in a rich soil, the thinner the plants are, the more they will tiller. Something depends too upon the time of sowing. Early sown winter grain requires less seed than late sown. For the first, five pecks of wheat or rye are ordinarily sown; for the latter, six, seven, and eight pecks are sometimes given to the acre. If grain is too thick, the shoots exhaust each other, acquire a yellow dusky tinge, and if the season be unfavorable, many of them perish. The roller upon the young crop, by often burying the crown, inclines the plants to tiller better, that is, to throw up more seed stocks.—Von Thaer condemns the practice, prevalent upon the marsh lands of the Oder, of seeding with eight bushels of oats to the acre, and affirms, that he gets the best crops where he has only five or six plants to the square foot. An instance is quoted in the Quarterly Journal of Agriculture, of two-thirds of a crop of potato oats being destroyed by the grub, and yet from the luxuriant growth of the remaining third, the yield was 60 bushels of fine grain to the acre.

A change of seed is strongly advocated by some, and thought unnecessary by others. Among the latter, was the late T. Cooper, of New-Jersey, who considered that varieties improved under his careful management in using only his select seed. The weight of testimony, as well as our experience, seems to be in favor of change. The writer of British Husbandry advises, that seed be procured from land of an inferior quality, as well as from a drier climate; for strong lands, from poor light soils, or from the fens; and for friable loams, from stiff clays—and avers, that a shrivelled sample of wheat, from a poor gravel, has produced a beautiful crop when sown upon adhesive clay. Wheat may be sown when one year old, but rye, barley and oats are always preferred for seed when of the last harvest.

The injury of frost upon winter grain does not depend so much upon its severity, as upon sudden changes of weather, and upon the condition of the soil in regard to moisture. In long continued frosts, which have penetrated below the roots of grain, the plants have tillered with extraordinary luxuriance in the ensuing spring, and the sharpest winters have generally been productive of the most abundant crops. Sunny days and frosty nights are very trying, especially when there is not slope enough to carry off the water as it falls or melts from snow, as the ground being yet frozen, it cannot sink into the soil; and the ground being thawed during the day, shrinks from the roots, which thus become exposed to the frost of the night, and the most vigorous plants find great difficulty in resisting these alternate changes of the weather. The best preventives of the evil is, upon level surfaces, to sow upon ridges, and to use the roller, and perhaps first the harrow, as early in the spring as the state of the ground will permit.

Ripeness. If grain is suffered to become dead ripe before it is cut, considerable loss must inevitably result from the depredations of birds and insects, and the shelling of the grain in the process of harvesting,—and the straw is much diminished in its nutritious properties. And besides, although the grain may be subject to some shrinkage, it is contended that both wheat and rye make the best flour when cut before the kernel becomes perfectly hard, and if not too early, that the grain is brighter and of a better color. It is generally conceded, that, from these considerations, it is better to cut them before they are fully ripe.

The grain of each species produces, when ripe, nearly the following quantities of meal, or household flour, and bread, per bushel, namely—

Wheat,	if weighing	60 lbs.	of Flour,	48 lbs.	of bread	64 lbs.
Rye,	do	54	do	42	do	56
Barley,	do	48	do	37½	do	50
Oats,	do	40	do	22½	do	30

[*See British Husbandry.*

Agriculture in Maryland.—Petitions are before the legislature of Maryland, praying the establishment of

"1. An agricultural school and pattern farm.

"2. A general state agricultural society, to be formed by delegates from county establishments.

"3. County agricultural societies, to be voluntarily formed.

"4. That the state grant bounties in the silk and beet sugar business. And,

"5. That facts in regard to the latter be collected, published and distributed, at the expense of the state."

The Rural Library—Is the title of a monthly agricultural work, of 32 8vo. pages each number, published at New-York, by S. FLEET, former editor of the New-York Farmer, at $3 per annum. It is intended to comprise standard works on Farming and Gardening, selected and original. The second number, which has reached us, is well executed. Subscriptions will be received at this office.

To Printers.—Our exchange is already extensive, and is increasing. Our monthly sheet does not offer an equivalent for one published weekly or semi-weekly; while on the other hand we can derive but little benefit from any but agricultural or horticultural publications. To benefit both parties, we propose to conductors of newspapers, that instead of their papers, they send us ten subscribers, and a $5 bill, and receive the Cultivator as their commission. This arrangement, while it cannot prejudice their interest, or give them much trouble, will save them the price of their paper, and extend our (we believe) useful circulation.

Exculpatory.—We have been advised by a highly respectable correspondent, that G. Page, Esq. P. M. at Morristown, N. J. feels himself aggrieved by our notice of the failure of monies by mail; that Mr. Page exerted himself to trace the lost letter, mailed at his office, and that he obtained at Philadelphia the way-bill which accompanied the letter to that post-office, thus showing that the missing letter was sent from his office. We implicated no one, but gave merely a statement of facts, leaving the public to draw their own conclusions. We consider that Mr. P. is wholly exculpated from blame.

Acknowledgments.—We have received from Gen. Tallmadge, madder seed from France, and Russian seeds of the cucumber, and of or-

namental plants; from H. L. Ellsworth, Esq. Washington, a sample of the Baden corn; from Mr. Allen, of Chili, South America, samples of Chilian wheat. We tender to the gentlemen our thanks for these favors.

TO CORRESPONDENTS.

We have many communications on hand, which will receive as early a notice as our limits and leisure will permit.

"A Subscriber," who addressed queries to Mr. Ball, is informed, that answers to his queries have been left for him with the conductor. We beg it to be understood, that we do not hold ourselves bound to respond to the inquiries of anonymous correspondents, unless their object is manifestly to elicit useful information in the business of husbandry; and where this *is* the object, there is no substantial reason for withholding the inquirer's true name.

Gentlemen who have sent us mineral specimens for analysis, are advised that we make no pretensions to geological science, and that Prof. Mather advertises to analyze minerals, &c. on moderate terms. See his advertisement on our advertising sheet.

CORRESPONDENCE.

THE MULBERRY—DIFFERENT SPECIES.

To the Editor of the Cultivator—Sir—With your leave, I avail myself of the columns of your widely circulated periodical, to communicate to the silk culturists of the country, some information which appears to me to be of great importance to them. I am one of those who firmly believe, that the culture of silk in the United States, is of immense interest, regarded either as a national or individual concern, and I am rejoiced to see that this conviction has already taken root, and is daily extending among the intelligent and patriotic citizens, so as to ensure its success.

It is my purpose to speak in this communication, of several species of the mulberry, and of the qualities of their leaves as food for the silk worm, and their resistance to the rigors of our northern winters.

The Morus Alba, or white Italian, it is certain, affords an excellent aliment for the worm, and at the same time is capable of enduring our severest cold weather. The branches of this tree are sometimes affected by frosts, especially if the autumn is unfavorable, and the wood has not been matured; but generally speaking, it is as hardy a tree as the apple. The silk produced from its leaves, is of a good quality, and well reeled and manufactured, makes beautiful fabrics. If we had no other species of the mulberry, we ought to be satisfied with this kind.

Much has been written and said of the Chinese, or Morus Multicaulis, and the expectations of the silk culturist have been highly excited as to the great value and importance of this species. It is a beautiful tree as regards the size and brilliancy of its leaves; and the facility with which it can be propagated, and its leaves gathered, would strongly recommend it to notice and cultivation. The question of the most importance is, what are the qualities of its leaves? It is well ascertained, that the quality of silk depends on the nutritive qualities of the mulberry leaves. Count Dandalo, than whom there is no higher authority, says, that "the leaves of the broad leaved white mulberry contain but little saccharine matter," and you make the remark, which I believe to be correct, in the last number of the Cultivator, that "both the fabrics and raw silk from our native mulberry, although they do not excel in softness and beauty, they appear equal to any in strength and durability." Gen. Tallmadge's information, that the Italian sewing silk, which stands so high, is neither produced from the white mulberry nor the multicaulis, but from the indigenous mulberry of the country, the black or *Morus Nigra*, confirms the position that the quality of the silk depends entirely on the quality of the leaf.

With these preliminary remarks, I state, that I received a letter from Mr. Andrie Michaux, under date of the 4th of July last, at Paris, containing the following remarks:—"The *Morus Multicaulis* does not answer the expectation it raised. Already we have ascertained that its leaves are not as suitable for the nourishment of the silk worm as those of the common white mulberry tree. A method has been introduced, that promises to be advantageous, and has succeeded so far very well. It is to graft or inoculate near the earth, or two or three inches above the soil, the common white mulberry on the plants of the *morus multicaulis*, two or three years old; these grafts of the common white mulberry grow to the height of four or six feet the same year." To enable us to decide on the verity of this statement, I can only say, that Mr. Michaux had no possible motive to misrepresent. His character stands too high even for suspicion; he is an eminent botanist and arborist, and his treatise on the trees of this country, attests to his ability in both departments.

I received a visit in November last from Mr. Lewis Finnelli, one of the exiles from Lombardy in Italy. He arrived in the United States during the last autumn, in company with seven other exiles, in an Austrian ship of war. Mr. Finnelli is a well educated and highly respectable gentleman, who had been thirty years engaged in the silk culture in Lombardy. He is intimately acquainted with the entire process, from the rearing of the mulberry to the preparation of the silk for the loom. He informed me, without knowing of Mr. Michaux's letter, that the leaves of the morus multicaulis were not considered as suitable food for the silk worm as the white Italian, and that the multicaulis was used in Lombardy as a mere recipient for the graft or bud of the white. I was struck with the coincidence of this intelligence, and communicated to him the contents of Mr. Michaux's letter.

I am not aware that we have any experience in the United States which would justify our discrediting the testimony of two gentlemen of such high respectability. Prudence at least would suggest to those who intend planting the mulberry, to be better assured of the qualities of the morus multicaulis, before they adopt it in preference to the white.

The silks of Turkey have long been celebrated for their softness, richness and brilliancy, notwithstanding the inferiority of their manupilation, to the silks of France and Italy. This can only be accounted for, by the superior excellence of the Turkish Mulberry.—Commodore Porter visited Broussa in 1832, and in one of his published letters, says:—"We visited the silk manufactories for which Broussa is so celebrated; they are spread all over the city, but there is nothing that can be called a silk factory. The weaving is all done by job work, of so much the *peake* of 3-4ths of a yard or thereabouts: *and these stuffs, so remarkable for their beauty*, are wove in miserable little rooms, only large enough to contain the loom and the weaver, or two weavers, as the case may be."

Fortunately there are already trees growing in this country, from the seeds of the Broussa mulberry. Mr. Charles Rhind, some years American Consul at Odessa, struck with the beauty and brilliancy of the Turkish silk, came to the conclusion, that it was attributable to the superior qualities of their mulberry leaves; and that he could not confer a greater benefit upon his country than in acquiring the seed of this species, and planting it here. From the local situation of Broussa, which is on elevated ground at the base of Mount Olympus, whose tops are covered with perpetual snow, and from the hardiness of the mulberry trees growing there, he concluded that it was adapted to our climate and would resist our severest winters. He obtained a quantity of the Broussa seed, and committed them to the care and cultivation of David Ruggles, Esq. of Newburgh, on the Hudson River, just above the Highlands. Under the superintendence of Mr. Ruggles, he has growing in his nursery, ten or twelve thousand trees, of about three years old. Through the kindness of these gentlemen, I planted out upwards of a hundred of these young trees, during the last spring. Mr. Ruggles asserts, (and from the appearance of the trees he sent me, I can confirm his statement,) they are very hardy, and not one of the several thousand growing in his nursery, has been affected or killed by the two last severe winters. Those I received were alive and unaffected at their tops and branches; they suffered little in transplanting, and but one died. When they made new wood during the summer, it became mature and ligneous, so that when the cold weather came on the last fall, every part of the tree was mature. My own observation convinces me, that this species of the mulberry is better adapted to our climate, than any other kind, and that it is hardier than the white. Mr. Rhind is of opinion that this species flourishes best in an elevated locality, and that it does not require a rich soil.

These trees will not be in the market until after a full trial of the qualities of their leaves in the nourishment of the silk worm; and if they answer the high expectations which Mr. Rhind cherishes, he will expect, and justly so in my opinion, to reap an ample reward for the expense he has been at and the trouble he has taken in introducing them into this country. It is my intention to feed a few worms exclusively on the leaves of the trees I have, during the ensuing season, and the result shall be made known.

Commodore Porter informs us, that the silk worm is reared in almost every house in Broussa, the inhabitants devoting to that purpose every room they can spare. "The town (he says,) is surrounded by plantations of mulberry for the use of the silk worm,

and asses laden with the limbs of which, may be every instant seen going to the city. These trees are planted in rows, not more than two or three feet apart, and are cut so low, that a man can reach the topmost limbs, which are all cut off every year as the worms require them."

The Turks have set us an example worthy of imitation. If the farmers in the neighborhood of our cities and villages would plant out mulberry trees. and supply the markets with the foliage daily; what is to hinder a vast many families from rearing the worm? I venture the assertion, that if families in moderate circumstances in the city of Albany alone, could be thus supplied, silk to the amount of one million of dollars might be produced annually. In this calculation I include, as a domestic employment, the reeling of the silk from the cocoons also. This process has been considered one requiring long practical instruction. The art of reeling a thread of equal size throughout, upon the reels in use in Italy and France, may and probably does require very considerable experience; but American ingenuity has taught us better. Brooks' reel, lately exhibited in this city, is believed to be a great improvement on any foreign reel, and it was made evident that the art of reeling on that reel is of very easy acquisition, whilst the work is admirably performed. What superadded comforts the families of our cities and villages might enjoy, if we would learn to follow the example of the inhabitants of Broussa!! The farmers in the vicinity of our cities, would be amply compensated for all their expense and trouble in the sale of the leaves of the mulberry.

The Turkish method of planting their trees is excellent. The mulberry should be kept headed down—never suffered to grow higher than six feet, and the lateral branches pruned. In my opinion, their trees are set too close together; they should have sufficient air and sun, and five or six feet apart would give them both.

Mr. Finnelli observed to me, that there should never be more than one crop of worms raised in one season; that plucking the leaves more than once in the same season was injurious to the trees, as they required new foliage to repair the injury of the first plucking; and that in Lombardy this was an established principle.

If, in any part of this communication, I have said any thing which may affect the interest of those who are propagating the *morus multicaulis* for sale, I regret the necessity which has imposed it on me as a duty, to promulgate what I believe to be both material and true.

Yours, &c. A. SPENCER.

DUTTON CORN.

Northampton, January 18th, 1837.

JUDGE BUEL—DEAR SIR—The following is the method of culture, and result of the seed corn purchased of you last autumn, which, if you think proper, you are at liberty to give a place in the Cultivator. The variety is the twelve rowed early Dutton, or Buel corn, and is the best with which I am acquainted, particularly for latitudes north of 40°, on account of its early maturity, which is, I should say, two weeks earlier than the common or eight rowed kind. Out of several acres of the latter, planted the last season, I had not a bushel of sound corn, it being destroyed by the early frosts, while the Dutton was ripened and harvested on the 20th September, and did not give more than two per cent of soft corn. In the preparation of, the method of culture, &c. I pursued the course frequently recommended by you; but was, through the whole process, exceedingly annoyed in contending with old prejudices and practices of laborers and others, who often rebelled, and were disposed to place themselves conservators over me, in spite of all resistance on my part. If their prophecies were to prove true, my corn would have been seven times blasted. Grave doubts were expressed as to the advantage of the roller, and in the preparation of the seed, (*see Cultivator, vol. I. page* 37,) "whoever heard of rolling corn in *hot* tar? It will be scalded, ruined, and never come up." It *all* came up, however, and why? Because, being of the early variety, it was well ripened the preceding backward season, the reverse of which was much complained of in the common kind. Then, again, "it was too thick—depend upon it, sir, when you come to look for ears, you will find nothing but stalks; two feet and a half! four stalks in a hill! it is entirely too much—it will cover the ground and you will get nothing." As to smooth hoeing, or without hills, it was a thing they had "strong doubts about." The cultivator, however, was allowed to be "a grand thing," and clean weeding presented no objections; here of course was a long respite, and I was allowed quietly to enjoy the pleasant anticipation of a good crop. It so happened that my corn was not hid in a corner, but grew in an open field, was subject to the daily inspection of many a passer by, and I was much gratified by the frequent remark, "what a fine piece of corn!" But when the harvesting came, the objector says, "you have done wrong in cutting it up, it is better to top it," and again, "you are entirely too early, it will not harden." The fact is, however, it got thoroughly hard, and brighter or better corn I never saw; it was cut the 20th September, husked and weighed the 10th November. The piece of ground measured one acre and five and a half rods, and yielded eight thousand seven hundred and eleven and a half pounds, (which, at 75 lbs. the bushel, allowed by the agricultural society,) gave one hundred twelve and a half bushels to the acre; also, four heavy two horse loads of well cured corn stalks, worth more than a ton of the best hay.

PREPARATION OF THE GROUND, MANURE, &C.

I have a fine lot, containing six acres, lying east, and in full view from my house, slightly undulating and gently sloping, on which two or three years ago, I commenced farming in miniature, on the rotation system, that I might judge of the comparative profit of good systematic culture, (by some laughed at as book knowledge,) compared with a slovenly and parsimonious habit, too often persevered in, and I am so far much pleased with the result; it speaks loud in favor of good husbandry. I am well satisfied, too, that you must feed your land if you would be fed yourself. This lot has for many years, (fifty or more, for aught I know,) been undisturbed by the plough, from the erroneous opinion that good grass land should remain for the scythe only. The soil is mostly a warm sandy loam; some part of it, however, is low and wet; this I have overcome by thorough draining. (On this subject I may hereafter have something to say.)

I prepared by deep ploughing last fall, a part of the above lot, carted and spread upon it the 10th of May, 38 loads of long unfermented stable dung to the acre, making five heaps to the load, dropped at five yards distance each way; this, after being carefully spread, was passed over with a heavy roller, and afterwards well harrowed, planted the 15th of May, and ashed as it made its appearance above ground.

ESTIMATE OF EXPENSES, &C.

Dr.—To ploughing with two yoke of cattle, 1¼ days, at $3,..		$4 50
Rolling and harrowing 1¼ days, single team, at $2,..		3 00
Seed corn,		1 00
Preparing seed corn with tar, &c.		25
Planting, two days, at $1,		2 00
Three hoeings, two days each, at $1,		6 00
Horse and man 1¼ days, with cultivator, at $1.50,.		2 25
Cutting and binding two days, at $1,		2 00
Picking and husking 7 days, at $1,		7 00
38 loads manure, at $1,	$38 00	
Carting and spreading, at 25 cents,	9 50	
	$47 50	
Deduct two-thirds for the succeeding crops in the rotation,	31 61	
		15 89
20 bushels ashes, at 12½ cents,		2 50
Spreading 1 day, at $1,		1 00
Interest on land, valued at $150,		9 00
		$56 39
Cr.—By 62½ bushels corn, at $1.50,	$93 75	
50 do. seed do. at $2,	100 00	
2 do. soft do. at 50 cents,	1 00	
4 loads stalks,	15 00	
	$209 75	
Deduct expenses,	56 39	
Profit,	$153 36	

I have not had experience enough to know which is the most preferable, to plough old sward land in the fall, and spread the manure on the surface the following spring, or to spread the manure in the spring before ploughing, and then turn it in. I think much may depend on the season, in the first practice; if the season should be dry, may not a good deal be dissipated by the winds? and again, if it should be wet, may not the roots reap a greater advantage, than if

it lay beneath the turf? I will thank you for your views on the subject.*

Although I used my own teams, and hire my labor by the month, at 12 to $14, yet in consequence of rainy weather, broken days, &c. I think it but right to charge the fair price of labor by the day, both for man and team. In estimates of this kind, the labor is frequently charged per day at the average of the price per month, which makes quite a different result. The estimate of corn, at $1.50, may appear to many overrated, nevertheless it is a fact, that corn of an inferior quality is selling with us at that price.

Yours very respectfully, H. G. BOWERS.

N. B. Since writing the above, it occurred to me that, although in the preparation of seed corn, tar is recommended chiefly, as a protection against birds, it may also have another very important effect, (thereby saving a replanting in consequence of wet weather,) in providing a coat, impervious to the superabundant water, until the sun shall, by its genial warmth, cause the germ to disengage itself from its confinement.

THE LOCUST.

Queens County, 23d January, 1837.

JUDGE BUEL,—Since our farmers have found it an object of importance to extend the cultivation of locust trees, amongst other means resorted to, has been the use of seed purchased in New-York. Of late we are not a little disquieted by the assertion that the trees raised from this seed, are the *white* locust; and of very inferior value. In general aspect they strongly resemble the old growth of the Island, which is unquestionably yellow locust of the best quality; but upon minute inspection, a difference in the size of the twigs is quite obvious. Moreover, those who have cut down the suspected trees, say that the wood is *not yellow*. Can you enlighten us on the subject? I remember seeing in the Cultivator (some time back) remarks upon what was *called* "the thorn locust," but which was said, not to be locust; and I also remember inferring from those remarks, that you knew of only one kind—which was the yellow locust. We wish to bring the matter before the agricultural community, and therefore beg that you will notice it in your excellent paper. A SUBSCRIBER.

REMARKS.—Our own observation leads us to believe, that there are at least varieties of the common locust among us, differing in the color and qualities of their wood, though we do not find a recognition of the fact in any work on botany, which we have consulted, except in Michaux's Sylva. At Boston and Long Island they speak of the *yellow* locust; while the wood of our locust is *white*. An inteligent friend living in Dutchess, told us some years ago, that his locusts were not affected by the borer, because they were of the *male* kind, not propagated by seeds, but by succors springing from the roots. Within three miles of this city is a healthy grove of locusts, while around the trees are destroyed by the borer. We have never compared the foliage or wood to ascertain if there exists a difference between the diseased and healthy. Michaux speaks of red, green and white locusts, which he says probably arises from a difference of soil. He says those trees are reputed best whose heart is red; the next in esteem are those of a greenish yellow heart; and the least valuable are those with a white heart. As this timber is likely to come more and more in demand, and the tree is easily propagated, even by succors, it is hoped some naturalist will investigate the subject more thoroughly, and publish the result of his inquiries. At present, we confess we have not confidence in success by propagating from the common seed, in districts where the borer is found.—*Conductor*.

LONG MANURE, DISEASES OF SHEEP, &c.

Michigan, Jan. 9th, 1837.

J. BUEL, Esq.—DEAR SIR,—I have been a subscriber and constant reader of your valuable publication, the Cultivator, from its commencement, and am surprised that any farmer who has ever read a number should fail of becoming a subscriber. Who has ever perused it and not found something in each number of sufficient value to pay for the volume? I firmly believe that, on an average, every farmer who tills fifty acres of land, by adhering to the rules laid down in the Cultivator, will add to the profits of his farm yearly the sum of $100. Who cannot point to a number of farmers, within the circle of his acquaintance, who might add $50 each, to the products of their farms yearly, by a more economical method of saving and applying that main source of a *good* farmer's wealth, putrescent manure? Instead of applying it in an unfermented state to his corn, potato or turnip crop, it is frequently suffered to lie in large quantities till fall, not only unsightly and offensive, but losing much of its valuable properties, and finally applied to a wheat crop, to which is often injurious instead of beneficial. Let us estimate the probable difference in the two methods of cultivation on only ten acres for two years, the first to be a surperficial cultivation, and the second on the old plan of ploughing and hilling for the corn crop.

1st. Crop corn with twenty loads coarse manure, fifty bushels per acre, 8s.		$500
2d. Crop wheat, twenty-five bushels per acre, 12s.		375
Total value of crop,		$875
2d. Method. 1st. Crop corn, without manure, thirty-five bushels per acre,	$350	
2d. Crop wheat, with twenty loads manure per acre twenty-five bushels per acre,	375	
		725
Difference in favor of 1st method for two years,		$150

Let us carry this one step farther, and say the first crop is cut up by the roots, and stooked as soon as the corn is glazed, husked as soon as dry, and the fodder secured in the barn, while the other is topped, as has been generally customary.

By the second method four bushels is lost per acre,	$40
Together with one-half the value of the stalks, say	20
Total,	$60
From which deduct the difference in harvesting, say $10 leaves	50

Which added to the first gain, makes a total of $200, or $100 per year; and yet this great difference is generally for a want of *knowledge*. Many pursue a still worse system than this, suffering large quantities of valuable manure to accumulate for years, thinking their land is rich enough without it. Time nor the limits of this communication will not permit me to enumerate the numerous subjects which are ably discussed in an agricultural publication, and which are of vital importance to every tiller of the soil,—suffice it to say, there is no topic relating to a farmer's business and interest, on which some useful hint is not thrown out. We are too prone to follow the footsteps of our fathers—never deviating from the old and beaten track. To be bred a farmer is often a great misfortune. It is a great satisfaction to see the progress that is made by those to whom agricultural pursuits is a new occupation; and yet their progress is mainly attributable to information derived from study. *Their children will be taught the value of agricultural publications*. Let every present subscriber endeavor to induce at least one of his friends to become a subscriber also, and bear in mind that he is doing a public good, and that every new subscriber adds to the intrinsic value of the paper, as the profits of the establishment are to be expended in rendering the publication more useful. I would suggest the propriety of offering small premiums to the best writers on different subjects; the premium to be a certain number of copies of the Cultivator, say ten; the merits of the writers to be decided by the conductor. These copies would be distributed, and by pursuing this course, the circulation might be greatly increased. Thus we should get the most useful essays, (the prize essay being published,) while those of less value would be excluded. If more should be sent than the intended premium, and a second subject not named by one of the contributors, let a subject be named by the conductor.

To set the example, I subscribe one copy of the fourth volume of the Cultivator for the best essay on the management of the dairy, embracing the making of butter and cheese, feeding of cows, rearing of calves and feeding of whey, milk and buttermilk, to be explained in a manner suited to the understanding of those unacquainted with the business, and to be sent in season for publication in the May number.* Will nine more subscribe each one volume?

I notice much written on the complaint in sheep, the worm in the head. I never tried a remedy but once, which happened to be the last case in the flock, (although we lost several previous to that,) and in that case a complete cure was effected. Not having occasion to try it again, I will not vouch for its efficacy. The remedy was Venice turpentine. The sheep was placed on its back, and about a table spoonful turned into each nostril, and in less than an hour it was up and had joined the flock, apparently as well as ever.

* We are authorized to award this premium.

* *Old* sward, for corn land, is best ploughed in the fall, and if long manure is at command, it may be buried in the operation. It will undergo but a slight if any fermentation before ploughing, and the soil will imbibe what it gives off of nutriment. A clover ley is best ploughed early in May, having the manure previously spread. If, in the first, manure is not at command, we would recommend that the plough be set deep, and that the manure be buried in the spring, immediately preceding planting, by a superficial furrow, which shall leave the sod as much as possible undisturbed.—*Conductor*.

The receipt for the scab (Cultivator, page 110) I have tried with perfect success.

Can you give any information respecting the feeding of hemp seed oil cake to swine, and would the seed of hemp or flax be valuable to boil and mix in small portions with swill for feeding store hogs?

Respectfully yours, NELSON CHITTENDEN.*

RUTA BAGA.

J. Buel, Esq.—Sir—Something like 20 years ago I commenced growing the ruta baga turnip, in consequence of its being so highly recommended by Mr. Cobbett. I found it to be one of the best of roots, grown with the least expense, according to its production. I sowed my seed by broadcast, after making my ground mellow and fine, about the middle of June; and from 80 rods of ground I gathered about 500 bushels of an excellent quality. But as this method of sowing rendered it somewhat tedious to dress out the plants properly, I have fixed on a different, and I think better plan. I find by the perusal of your excellent paper, that every man's way is the best, and by gathering a little from each of your correspondents, one might suppose it enough to make an agriculturist of any man of common sense, that will improve it. I however think it best never to recommend to the public any plan or practice, unless good reasons can be assigned for its utility, and the recommender can show, from actual experiment, that his plan is as good as the best. After years of experiments in the culture of the ruta baga, in which time I have tried many experiments, I settled on the following particulars in growing this excellent root: 1st. The land properly adapted to the nature of the plant is a strong loam. 2d. The land should be well ploughed early enough in the spring to have the sward rot by the 10th June. 3d. The land should be made perfectly mellow and smooth, and a good coat of manure, that is fine, say sheep or barn manure, should be put on. 4th. Throw the land into ridges 24 inches apart, with a small horse plough. 5th. After the ridges are rolled down a little by some light roll, say a straight cask with a shaft through the middle, and a horse attached to it—put in the seed on or about the 15th of June; the seed should be put in 10 inches apart the way the ridges go. 6th. After the plants are large enough to dress, be careful to have one plant in every hill, and only one. 7th. Dress them three times properly, and plaster them three times, say when they are breaking the ground, and after each of the two first hoeings.

I have found the above rules, closely followed, have never failed to produce a good crop; the last year I raised from 90 rods of ground 605 bushels of sound close grained ruta baga turnips. It was on land a distance from the house or barn, and never had to my knowledge a spoonful of manure on it until a few days before I put the seed in the ground.

Should you think the above worthy a place in your paper, it is at your service. Yours, respectfully,

J. M. LAWTON.

Great Barrington, January 22d, 1837.

Letter from Judge Mason, of Sing-Sing, to the Conductor.

FATTENING SWINE.

We have lately seen an abundance of experiments and instructions for rearing and fattening swine; and it is fortunate for the farmer, that the almost despised apple, (after cider was entered on the list of proscription) is now being elevated to its proper rank and standing. The apple is found to contain nutriment enough, not for keeping alive only, but for actually fattening and hardening our porkers, and that too, without the aid of corn. But like all other great discoveries, it will take some time and experience to reduce its importance to that simplicity and usefulness that will bring the expenses to a level with its value.

The last directions I have seen, include boiling or steaming with a mixture of flour or meal, or some such expensive article. This may all do in our western or newly settled countries, where firewood and timber must be burned to get them out of the way; but when wood attains the value of six or seven dollars the cord, and coals eight or ten dollars the ton, it would be sheer nonsense to talk about steaming or boiling.

I too have tried some experiments in this way, and I find that apples for feeding, to give them their highest value, must be pounded, or ground fine in a common cider mill, and then stand in tubs, or vats, for the saccharine matter to evolve, which natural process will be effected in about twenty-four hours in warm weather, and from that to forty hours as the fall weather grows colder, until freezing; and I will hazard the opinion, that one bushel of apples thus macerated, and passing through the incipient process of fermentation, will have acquired more nutriment and richness, than two bushels could impart if fed whole, or immediately after grinding.

Thus matured, the apples are ready far the swill-barrel, and with the addition of the wash and the wastage of the kitchen, or even clean water, till sufficiently diluted, will make a feed that hogs do become so fond of, as to leave ears of corn that may occasionally be given them, to fly to the trough for their favorite beverage. I have no doubt but the mass may be still bettered with the addition of bran, or shorts, or any sweepings or siftings of mills or granaries, the farmer may have on hand.

It is certainly very probable, that a combination of the carbonic, or alkalescent gasses of the atmosphere, with the juices of the apple, gave rise to the opinion among some old farmers, that the cider made in their circular troughs, with a large wheel, was always softer and sweeter than that of the nut mill, which many would not use; without any chemical knowledge, or even thinking at that time, that the slower process of the large wheel made the difference they tasted in the liquor.

Thus then we find, that a good orchard, with large pounders, or some cheap apparatus for grinding, would enable a farmer to winter a large number of hogs, and cattle, and poultry for breeding, or the spring market, when the high prices of grain will induce him to reduce his winter stock to the least possible number. If I was a farmer on a smart scale, I would go to the expense of putting up a cheap building to accommodate some grinding machine, with a close cellar under the whole to receive the necessary apples for winter feeding, made tight with good floor to preserve them from freezing through the cold weather.

HAY-MAKING.

New-Berlin, N. Y. Jan. 31, 1837.

Jesse Buel, Esq.—Dear Sir—My noviciate in farming commenced in 1835; and no operation of that year gave me so much anxiety as hay harvest: being ignorant of that, as of other operations of the farm, I committed the management of it to one who had the recommendation of experience, but whose greatest merit proved to be a most dutiful adherence to the practice of his progenitors.

A luxuriant growth of red clover was cut, spread out in the usual way, exposed alike to the influence of the sun and dews, and, as it often happens, before it can be cured, is saturated and bleached by showers; thus it happened in my case, and at last was housed before the stalks were thoroughly dried; the certain consequence of overheating in the mow ensued, and the hay came out materially injured. My better success the past season, I attribute entirely to the casual reading and practising on an article, Vol. I. No. 11, Cultivator, which I beg leave to remark in passing, I consider worth triple my whole subscription to the Cultivator. My practice was to cut no more each day than could be raked and put up into cocks of about 100 lbs. green grass; if mowed before the dew was off, the swaths were turned without breaking; if when the grass was externally dry, the horse rake followed hard upon the mowers. If showers intervened before getting it into the barn, all that was found requisite was to raise and loosen up the cock by inserting a fork at the crown; when sufficiently cured, the hay will retain a bluish green color. Before hay harvest was finished, it became obvious to me that this mode must yield a greater amount of hay by weight; accordingly I weighed out two parcels, each 80 lbs. green clover—one was cured by putting immediately into cock—the other spread in the usual way—when cured, were firmly bound up and placed in the mow. The result, by weighing recently, shows that the former is by ten per cent heavier, and the quality, judging from color and fragrance, manifestly superior.

The loss in weight is easily accounted for in the loss of leaves, blossoms, and the decomposition and dissipation of the volatile oil, which gives to hay its fragrance, and these I doubt not constitute the best properties of good hay.

The economy of this method ought to engage the attention of farmers, and more so because it is at a season when labor is in the greatest demand, and dearest. The expense of making hay by this

* We hope to be pardoned for transferring the name from the postscript to the communication.

method, may be safely set down at $1.25 per ton, presupposing the use of the horse rake and good labor at $1 per day. What is worthy of remark, the expense is not materially raised by adverse weather, which would render almost abortive any attempts in the old method. If farmers will try it, they will find that the old adage—"make hay while the sun shines"—will have lost half of its importance, and that the process of making hay will be going on in cloudy weather. They will also find that the operation is governed by such laws as cannot fail to give them good hay. The slight fermentation which is induced by the moisture or juice in the grass, subsides just so soon as heat enough is produced to evaporate it, and then the process is ended.

Permit me to suggest to novices in farming a simple method I have adopted, in keeping a daily register of all operations done on the farm, which will enable them to make statements without any admixture of conjecture and estimate, and to determine the profit or loss of any crop.

A book cross-ruled—left hand margin, day of the month—allow then two perpendicular columns to each man, in which, opposite to the day of the month, in one column set down the amount of labor done, in the other, the time at each kind of work; this is done in a very short note. This answers the other valuable ends of keeping accurately the time of hired labor, gives a connected history of the work of the farm, and is convenient on divers occasions, as a book of reference. Two minutes a day, is all the sacrifice of time—a trial of one year will be found the best commentator on its merits.

I have written the foregoing in much haste; if you consider any of the suggestions worthy, they are at the service of the readers of the Cultivator. Yours truly,

TRACY S. KNAPP.

Skaneateles, 2d month 4th, 1837.

ESTEEMED FRIEND,—One of the good effects produced by the call of the State Agricultural Convention last winter, may be named the establishment of an agricultural and horticultural society in this place, and, in the character of its corresponding secretary, I submit the following summary of some of its proceedings. The meetings of the society are held monthly, and although some of them have been discouragingly small, yet in no instance have we returned from them without feelings of interest, and in most cases arising from an increase of knowledge on subjects in which all the members of the society are deeply and personally interested; in proof of this, I will mention the subjects which being proposed at one meeting, have at the subsequent meeting afforded matter either for essays or for discussion. On planting and preserving orchards, also the best mode of using apples, so as to realize the most profit in feeding of stock. The right time for cutting grass and making hay. On the best tillage for the growth of wheat. On the comparative advantage of different breeds of sheep; and at another meeting this subject was resumed, and the best mode of wintering sheep united with it. On root culture. On draining. Root culture resumed this day, when it was agreed to give prizes for crops of ruta baga, carrots and parsnips, grown the coming summer, to be not less than four competitors in each class; the first premium $3, the second best $2; and for sugar beet to be three competitors, first prize $3, second $2; and should there not be the requisite competition, the society may award a prize for an extraordinary good crop of either root. It was cheering to see the facility with which the society raised the $20 thus appropriated, and more could easily be obtained if needed.

I do not know that I have more to communicate than expressions of thankfulness for thy services to the good cause, and a hope that the Convention, as well as the State Agricultural Society, may be enabled by its recommendation of sound measures, and good principles, to promote the public weal.

It would have heen very pleasant to have witnessed the deliberations of both bodies, but circumstances, over which I have no control, deprived me of the gratification. Thy friend,

JAMES CANNINGS FULLER.

ON TRAINING THE GRAPE.

Schenectady, December, 1836.

DEAR SIR,—We are frequently told that grape vines must be kept from climbing high; that the fruit will be richer and better, than when the vines are high, and far from the ground and their roots.

When Bishop Brownell left his professorship in Union College, he sent to me a small grape vine with root. I set it near the paved walk from the street to my yard and garden, a south aspect. I erected a trellice frame over the walk and cistern, 10 feet high, and the part next the house on a slant to 15 feet high, and about 14 feet wide on the ground. The vine soon covered the frame, and bore grapes resembling the kind called Isabella grapes, but higher flavored. It has been exposed to all the late hard winters, and suffered some in the small branches, and yet it has uniformly borne well. I have always noted that the bunches of grapes on the highest part of the frame, from 10 to 15 feet from the ground, were much the richest in flavor; when those from 5 to 10 feet from the root, perpendicular, and most exposed to the sun and air, were very much inferior, and not well ripened. On seeing the Bishop some years since, he told me the grape was the Frontignac.

If you judge the above may be useful enough to find a place in your Cultivator, you may give it a place.

Most respectfully, DAVID TOMLINSON.

BEET SUGAR.

ROYAL AND CENTRAL SOCIETY OF AGRICULTURE.

Report in the name of a special commission composed of M. M. Le Baron de Sylvester, the Duc Decazes, Count de Chabrel, Darblay, Crespel Delise, and Payen, reporter, with practical instructions, and prize questions on the extraction of sugar from beets, adapted to rural establishments, and the means of improving and forwarding this branch of industry, made in 1836.

[Translated from the French, by D. Spoor.]

GENTLEMEN,—You have charged us with the examination of a question of the highest interest for the agriculture and industry of France. Permit us then to cast a rapid glance over the vast field that lies open before us.

Numerous incontestible and undisputed facts show the immense advantages that will result from the increase of the culture of beets, and the extraction of the sugar, which they contain in abundance.

It is only by the exchange of their crops into commercial products of greater value, or capable of home consumption, that the cultivators can relieve themselves from the state of distress to which the successive reduction of the price of grain, as well as the deplorable condition of most of our ways of communication, have reduced them.

In this sense, a useful impulse may be given, by forwarding the connection, so desirable between the agricultural and manufacturing industry. Already the happiest results have been realized in the erection of starch manufactories (feculeries) several oil mills (huileries) and other manufactories, in the midst of districts adapted to furnish them with the raw materials.

All these sources of industry together would not extend so rapidly the benefits of productive labor, and none of them assist so much in the progressive melioration of the soil, as the manufacture of indigenous sugar. In fact, the commercial product which is obtained from it, does not produce any sensible diminution of organic azotic matter, which is very justly considered by agriculturists of the present day, as the most valuable and precious agent of the fertility of the soil.—The beet has also this advantage over most other cultivated plants, that it may, if required, be sown on the same ground for ten and even fifteen years in succession, without diminution, and even with increase of the crop, as has been proved by numerous experiments made by Mr. Coste, at Sailly, Delisse, at Bithune, Crespel Pinta, at Arras, Crespel Delisse, at Brevellers, Lesneur, at Abbeville. Their rapid growth, completed in four or five months, draws forth from the bottom of the vegetable mould the soluble manures, to be in the end applied to the surface, either in the form of the decayed leaves or tops, the scum and dregs applied as a manure, or in the dung of the animals fed with the pulp after the extraction of the sugar. The plants require attention that will give useful occupation to individuals of both sexes; loosen the soil, destroy noxious weeds, furnish abundant herbaceous nourishment for cattle, disturb and destroy the different little destructive animals, which often multiply during the continued culture for several years on the same soil of such crops as do not require hoeing. It is thus, that the culture of the beet realizes the wish, so generally expressed by agriculturists, the introduction of a plant that requires weeding; the essential basis of a real improvement of the soil. The last stripping of the leaves (effeuilage) the digging, or pulling, (arrachage) and the storing comes opportunely at a season when almost all the other crops are housed.

The residue of the beets, after the extraction of the sugar, consists, 1st. Of the pulp, almost as rich, and more easily converted in-

to nourishment by cattle, than the beet itself.* It is very useful for fattening cattle, and more so for sheep, and when fed to cows it increases the quantity of milk; and we may even obtain from it, by drying or preserving it in cisterns, one of the best substances as a provender for domestic animals. 2d. The albuminous, and slightly alkaline scum, which forms an excellent manure for lands. 3d. The molasses, the use of which is not limited to furnishing the raw material to the distilleries, the manufactories of tobacco, and of white lead, but furnishes at the same time a wholesome aliment for cattle, and a condiment, or seasoning, which is the more useful, as the salts drawn from the soil, where they are injurious, seem to give a healthy excitement to the digestive powers of animals.

The production of domestic sugar is then one of the most fruitful sources of prosperity for France. Already we owe to it the gradual reduction of the price of this commodity; when the price of that from the English colonies has just risen in consequence probably of their legislation, and the change in the condition of the slaves.

Our annual consumption, actually amounting to 100 millions of kilogrammes,† is not equivalent to the half of that of an equal number of individuals in England, Germany, Switzerland, or Italy.—This consumption is in a good degree interdicted to the poorer classes, only by the high price of the sugar; active competition, and better management of the beets, are of themselves sufficient gradually to increase this consumption in connection with the general welfare. Besides, the manufacture of domestic sugar will not exist isolated; it will protect divers other branches of industry; the preparation of lime; the manufacture of animal charcoal; works of metallurgy; the construction of steam engines; the manufacture of cloth, of casks, and as many other mechanic arts;—we have said nothing of the results, now less perceived, but not less real, and still more important, which will evidently follow from the extension of a work that calls for intelligence among the uninformed, and too often idle population of the country. Such as the physical and intellectual improvements, the communication of elementary knowledge, the reading of publications on agriculture and manufactures, and the general comfort. In order that the manufacture of sugar from beets may realize all the good we have a right to expect from it, it is necessary that it becomes general without delay, not only in those great centres of production, which are to supply commerce and the refineries, but also that it be introduced among the small cultivators, and thus causing the consumption to extend even to the cottage of the poor. It is with this design that the Royal and Central Society of Agriculture makes an appeal to the enlightened patriotism of persons familiar with the operations of our manufactories of domestic sugar.

We can already cite several examples of small manufactories undertaken by farmers. For instance a land holder in Limagne and Auvergne, has succeeded in extracting from 50 to 75 kilogrammes, 110 to 165 lbs. of raw sugar per day, with very simple utensils, at the same time that he increased the feed for his cows, and the manure for his lands. There are in the department of the north, several small manufactories conducted by the workmen on the farm, and several associations of farmers have obtained advantageous results in the neighborhood of Valenciennes, Toulouse, Limoges, and Nismes. Besides, it is well known that farmers have found great advantages in associating to carry on their manufacture of cheese, wine, cider, &c.

An example worthy of imitation has been given long since by two members of your commission. It consists in an exchange of the beet crop for raw sugar, between the agriculturist and the manufacturer.‡

In order to instruct those who wish to engage in this branch of industry, and who have not practised the manipulations, we will give a short description of the most simple processes, insisting on those points which competitors must endeavor further to simplify, and bring to perfection.

We remark in the first place, that all light, arable lands, not too stony, generally free from excess of humidity, or the other extreme of excessive drought, are suitable to the culture of the beet, provided also, they are free from saline impregnations, as is the case in some countries, especially in certain marshes that have been drained, or filled up with earth, or manured with materials containing salt petre, or beach sand; moreover an attempt at cultivating even these soils, may often be proper in order to obtain one of the best roots, to be used as food for cattle, and for extracting the saline matter from the soil, especially as in these soils, the crops are generally very abundant.

Finally, the society would rejoice to see some one engaged in ascertaining, more precisely than has been done, the influence of certain proportions of soluble salts on the quantity of sugar contained in beets, and especially on that which may be extracted from them under similar circumstances.

Variety or choice of beets.—The white (called the) Silesian beet, appears generally to deserve the preference; but some varieties with long tapering roots, such as the yellow beet of Castelnaudery, would perhaps be better adapted to loose and deep soils. It would be especially desirable to ascertain the products of these varieties, compared with that of others, particularly in our southern departments, where manufactories of indigenous sugar are beginning to multiply.

The pulling of the roots.—It is important to perform this operation with care, and so as to avoid as much as possible bruising the roots; we should also seize a favorable opportunity, lest the rains, and finally the frosts, should make it almost impracticable, at least in certain localities, where the earth soon becomes saturated with water, and very tenacious. Several economical modes of uprooting (arrachage) have been proposed. A decision in favor of the most preferable mode, regarding the nature of the soil, would be a useful result, the communication of which would interest the Royal Society of Agriculture.

Storing or housing the roots.—It is also important to commence in good season, the working of the beets; for instance, as soon as they have attained to maturity, or even a few days before, and as fast as they are taken out of the ground, in order to avoid that spontaneous change, which greatly diminishes the proportion of sugar to be extracted from them. It is always necessary to store a great portion of the crop, in a convenient place near the manufactory. Trenches or ditches in the earth, of from three to five feet in width, and the same depth, answer very well; these are filled with beets having their leaves and tops cut off. They are covered with a coat of compact earth, of from twelve to eighteen inches thick, and at equal distances of six feet is implanted a small fascine or bundle of brush, of about six inches in diameter, to make a vent for the heat, which is ordinarily extricated from the buried roots, and which would cause all the roots to spoil. Several kinds of trenches, of different depths, but of sufficient extent, have been tried; lately the flues of the trenches have been improved, by extending them even to the bottom, where they communicate with a gutter, running the whole length of the trench, under the beets. It is desirable that trials should be made that would show the comparative merits of these different methods.

Extraction of the juice.—Until the present day the most convenient means consists in the employment of a rasp or grater with strong teeth; the cylinder of which ought to make from 600 to 900 revolutions in a minute; its plates ought to be easily taken off and replaced. If the grater is moved by machinery, the man who holds the beets, may have his place supplied by a mechanical contrivance, (pousseur) provided that the roots have not been grown on a stony soil.

Several mechanicians furnish these utensils of a proper construction, and no doubt they may be still further improved and simplified. The presses with iron, as well as wooden screws, are of simple and cheap construction, and seem to be well adapted to their use. Competitors should always examine whether other arrangements would not be more economical or more effectual.

In the manufactory already alluded to, a jack similar to those used by wagoners and stone-cutters, was suspended from a beam and served for pressing the scum, which was put on a tray placed on the edge of the clarifying boiler. A similar contrivance might be used for pressing the pulp, at least as an experiment, to avoid unnecessary expense in the small manufactories which are now in progress of erection.

Competitors might try a process, which seems at first sight much more economical, that is maceration. But hitherto the success o

* In many places the graziers find a profit in buying the pressed pulp at a price superior to that of an equal weight of the entire beets.

† The kilogramme is equivalent to 2 1-5 lbs. avoirdupois.—*Tr.*

‡ In 1813 Mr. Darblay exchanged his beets for raw sugar, which was extracted from them in a manufactory situated at Vaugirard near Paris, under the direction of Mr. Payen. The sugar was directly applied to ordinary consumption.

maceration remains doubtful, in consequence of too much complexity in the apparatus for its performance, the increase of the quantity of fuel necessary for evaporating from 25 to 33 per cent more water, and the difficulty of using or transporting the dregs or residue, the weight of which exceeds that of the roots employed. It is of high importance that all uncertainty on this point should be settled.

Lime to be prepared for clarifying the juice.—It is very important to procure strong lime of good quality, and to slake it when about to use it with hot water, and finally, to add gradually a sufficient quantity of water, so that the lime may undergo the greatest possible division. The stones which do not slake should be replaced by an equal weight of quick lime, which should be slaked with the same precautions.

Instead of weighing, the lime may be measured, either by using the paste of lime, previously slaked, of a certain consistence, and kept under water, or the milk of lime, the thickness of which, or its degree of strength, may be estimated by the areometer,* or by any other floating body, taking care to immerse and observe it the very moment when the liquid has just been well agitated. It is well always to rinse, with milk of lime, all the utensils after washing them, in order to prevent the formation of an acid.

Defecation—or purifying the juice.—It is at the moment when the juice attains a degree of heat that is insupportable to the finger, (from 70 to 80 degrees,)† that the milk of lime is poured in, the whole stirred briskly, and then the scum suffered to rise. (It has been proposed to saturate the juice of the beets without heat, immediately after its extraction. This mode of proceeding appears plausible; but experiments properly conducted, and their results compared, are necessary to settle opinions on this subject.) As soon as boiling commences, the fire is put out, or the stop cock in the steam pipe closed, if the heat is communicated by steam. It is left at rest for six or eight minutes, and then drawn off clear.

The scum, gradually pressed, yields a part of its juice; it is then usefully employed as a manure, after having been dried by mixing it with lime in a state of powder. The clear or defecated juice should immediately run through a filter of coarse animal charcoal, which has already once served to clarify the concentrated syrup of a preceding operation. Thus the defecated juice washes the animal charcoal, and at the same time purifies itself.

Several new methods of rendering the defecation more complete, and producing less change in the sugar, are at this time proposed, the effects and usefulness of which competitors would do well to observe. As fast as the juice passes through the filter, it is evaporated to 25°;‡ then, after having left it to settle in some receiver, it is poured on a second filter of coarse animal charcoal, when the purification is finished. It is above all important to perform this operation with all the expedition which can be obtained from the shallowness of the boiler and the facility of transferring the liquor from one vessel into another.

During the first moments of the evaporation, it is well to add the portion of fine charcoal separated in the revivication.§ This fine charcoal is in part brought to the surface with the scum, which is taken off to be added, after the lime, to a subsequent defecation; this scum is then added to the first, and is treated simultaneously with it. The syrupy deposites in the receiver are also added to a subsequent defecation.

The syrup obtained, filtered at 25°, may be left some hours with as little inconvenience as the weaker syrups, in order to obtain some rest; it ought then to be boiled briskly in a caldron in full ebullition at every point. If too much froth seems to rise, which happens especially when the dose of lime employed has been too weak, a small lump of butter should be thrown in, which will allay it; when an excess of lime has been used, the ebullition towards the close of the boiling is very slight, especially if the coarse charcoal was not sufficiently absorbent, or employed in sufficient quantities. It is to be observed in this case, that the liquid, once in the state of syrup, boils so little and loses so little vapor, that it is said then the syrup (clairee) is *immoveable*.

The committee have thought that the process of blowing in hot air, (insufflation) reduced to its most simple form, would render the operation of boiling more easy to farmers than any other mode, and the danger of *immoveable syrups* thereby completely avoided. To this end, a fine bellows furnished with a good valve to guard against the return of the heated air, might suffice for forcing in the air, which after having passed through a heated cast iron tube, would issue near the bottom of the pan, by several holes in a tube that traverses the syrup.* But this process forming a base of a patent it might perhaps be necessary that competitors should have an understanding with the patentee, *Mr. Brame Chevallier*, unless this manufacturer should himself become a competitor.

As soon as the liquid is so reduced that a drop pressed between the thumb and forefinger forms, when the latter is suddenly separated, a thread which breaks and bends, the evaporation is completed. There are other means for taking the proof, and it would be well to determine which is the most certain for persons unaccustomed to conducting these operations. If one boiling was continued too long, the next quantity might be evaporated less, so as to compensate for the excess.

The boiled syrup is poured into a *cooler*, made of copper or wood, of dimensions sufficient to contain the whole of four or five boilings, the whole is gently stirred from time to time to hasten the cooling, and the formation of some crystals; the whole is then poured into conical moulds of earthenware. Wooden vessels, or even tin crystallizers, which might be made and easily repaired in almost every village, would probably be preferable to *earthen* moulds; competitors will try to discover whether there is not some other vessel more convenient and economical. At the end of two or three days, when the crystallization is completed, it is left to drain in a place, the temperature of which should be kept constantly at from 18 to 20°.† The opening in the bottom of the mould should be uncorked, and the mould placed erect over a pot, or on a kind of bottle decimer;‡ and in this last case, the moulds are placed over a gutter of cast copper, tinned, or one cut out of free stone, leading to a small reservoir below, sunk into the earth. If tin crystallizers are used, these are placed vertically, in pairs, with their brims applied to each other, over a gutter of lead or tin. If the draining has been performed in a damp situation, there takes place a kind of natural separation, which is sufficient to make the sugar fit for ordinary consumption. This was the case in a manufactory belonging to one of this committee; the raw sugar kept for three months had lost its original disagreeable smell, and was directly consumed.

The molasses reboiled yields a second crystallization, but more slowly. This takes place as well in the crystallizers, and the draining may be performed through a cloth placed in the bottom of the moulds. Finally, a third crystallization may be obtained by putting the crystallizers into a hot-house, or as is the usual practice, in reservoirs, where the second molasses daily accumulating, is left for a whole year. (*To be continued.*)

* An instrument to ascertain the weight of liquids.—Tr.

† Reaumer Scale—70° to 80° of which are equal to 190 to 212 Fahrenheit.—Tr.

‡ Whether this is the Hydrometer or Saccharometer is not stated.—Tr.

§ An operation that will be described in another place.—Tr.

* The sufflation, or the blowing in hot air, would also greatly hasten the first evaporation, and might be practicable in the country, where hand labor is often very cheap.

† 72½ to 81½° Fahrenheit.—Tr.

‡ A board pierced with holes, into which the neck of the inverted bottles are put to drain them.—Tr.

FOREST AND TIMBER TREES—OSAGE ORANGE—SILK—COTTON AND SUGAR BEET AGRICULTURE.

Nonantum Hill, Newton, Mass. Feb. 8, 1837.

J. Buel, Esq.—Dear Sir—I am induced to send you a few remarks on timber trees, to which I shall add some observations on other subjects. I was induced to this at first, by an observation in one of the late numbers of your highly valuable Cultivator, where, in speaking of the Osage Orange, (*Maclura aurantiaca,*) you say, "*The Osage Orange is tender, even more tender than the Morus Multicaulis, as it had been killed down to the ground with you every winter.*" These are the words as near as I can recollect, in substance. I had stated in some of the periodicals last spring, which I have seen copied into other journals at Hartford and Albany, *That the Osage Orange was a hardy tree, as it had sustained the rigors of the last severe winters near Boston.* I have two trees standing on the hill where I reside, one seven and the other eight inches in circumference, the one ten feet high and the other eleven feet; here they have stood since the spring of 1829, and without any protection, and are yet uninjured by our most severe winters; one in a northernly and bleak exposition, the other northwesterly. The soil loamy and springy, resting on solid hard pan of gravelly clay. The tree being yet rare here, I know none so large in this state except at the Botanic Garden in Cambridge, where

I think I have seen *large trees* of the maclura.* I have generally bought these trees, but never recollect to have lost one single tree by winter. Yet when I had read your account, and towards the last of December and some time after winter had set in, recollecting I had a nursery of a few thousand of these trees on some low sloping land, which I bought last spring, and then only a year old, I caused horse manure to be spread over the roots, leaving the tops quite exposed as before.

We know from experience, that even in our climate, the pear, the cherry, the plum, and the quince, while young and of but a single summer's growth, *are tender trees*, and require protection during the first winter on a naked and defenceless soil. We know that these trees during the first winter are liable to be thrown out by frost and destroyed, unless we afford them protection; but in the second winter, if they grow well, we have rarely witnessed any injury from the cold of winter. I am inclined to believe that the climate of the valley of your great river, is exposed to a degree of extreme cold during winters, which is unknown in the same latitudes on high hills a little remote, or on the lands near the sea. The same remarks may apply to the valley of the Connecticut, from the position of the river throughout its whole extent, from Canada to the sea.

The Osage Orange is a beautiful tree, its leaves bear striking resemblance to those of the orange tree, and the wood, like that of the orange, is armed with long sharp spines. At Philadelphia, it is asserted, that it makes the finest, the strongest, and most beautiful hedge in the world; being set out in a single row at the distance of twelve or fifteen inches asunder. As to the timber, my authorities are the Hon. Mr. Sevier, member of congress from Arkansas, and Mr. Flint, who wrote the account of the western states, who assert that the wood is remarkably tough, strong and elastic, and is preferred by the Indians to all other wood for bows, and hence the name of *bow wood*. The timber admits a fine polish, and is useful as such for the cabinet maker. For timber, they assert, that it is one of the strongest and most durable in the world, and is preferred in the construction of steam-boats even to live oak.

Observing the remarkably hard texture of the three thorned acacia, I had suggested that this wood promised to become a most valuable timber tree, like some others of the same tribe; but this suggestion was contradicted in some of our eastern journals, where, it was asserted, that the timber was *worthless*. But Mr. Flint has assured us in his work on the western countries, that the three thorned acacia is one of the strongest and best of all the varieties of timber, and is much used in the construction of steam-boats on the western waters.†

It is truly said by artificers in wood, that for many purposes, a pound of wood is stronger than a pound of iron. In regard to *strength*, the oak, the shagbark, and the ash, are among the most valuable known with us in our climate, and are applied to an infinite variety of uses. The ash, though less durable than the oak, is light, strong, elastic, and works very smooth, and is therefore very superior to oak for a variety of uses; for the shafts and springs of riding carriages particularly. There may be, however, some kinds of wood even superior to the ash for all these purposes. I have observed, for this last purpose, that the *lance wood* is lately sometimes used, a tree which grows in the West Indies, and is far superior, stronger, more fine and elastic, inasmuch as the shafts and springs of chaises formed from this material, require but half the volume or thickness as ash. Iron and steel could not, for these purposes, supply its place. I know that the wood of tropical countries is more solid and compact generally than ours, but I hope some new kinds may be found in our own extensive country, even far superior to any well known variety of our own native timber, and adapted to our climate.

I have sanguine hopes that the sugar beet culture will succeed and flourish with us, as it now does in France. Silk and the sugar beet, I learn from the best authority in France, are the all engrossing objects of culture at this time and in that country. There, even the cake of the beet, which remains after pressure, is stated to be worth more for cattle than the roots in their original state,‡ being more condensed and less watery. It is evident that great and most decisive improvements have been made in France, which have turned the scale entirely, since count Chaptal and Iznard were concerned in its manufacture. For there, even in that country, its manufacture could not be sustained, with all the encouragement which a protective system and high prices could afford; but then, according to Mr. Iznard, only two pounds of sugar was produced from 100 pounds of beet root; but now six or seven, or eight pounds, is produced; and in Silesia, it is stated, ten pounds are produced from 100 pounds of roots, which quite alters the case. Sugar, as a food, is one of the most nutritious, wholesome and economical of all the necessaries of life, inasmuch as the whole tribe of fruits, even the refuse of our orchards, however acid and austere, may be converted at once into the most palatable and wholesome supplies of food for man, by the addition of sugar: also, the most insipid and tasteless articles which we consume as our food and our drink. Its antiseptic qualities are well known in the preservation of meats.

I have great expectations in regard to silk and its culture among us. Look but at the improvements already made in its manufacture. At Nantucket I have seen the looms which will weave, in a finished style, pongees at the rate of two and a half inches in a minute; and those who know the best there, are the most sanguine. We have now to carry these same improvements into every branch. It is vain to prescribe bounds and to tell where improvements are to stop. They must pervade every department, from the commencement of the culture, till the perfect fabric is completed; and every invention must be sought after to abridge labor, and to overcome its high price in our country. I am confident that success will crown our endeavors, beyond any reasonable doubt, as in all things else.

Let me here just state how, by the ingenuity of our citizens and their enterprise, we have overcome all obstacles in regard to cotton. Even, it is stated at this day, that the spindles of the throwing machines for silk in Piedmont, and where the invention first began, perform but three or four hundred revolutions in a minute, while in England they perform from 1,800 to 3,000 in the same time. But the spindles of our machines for cotton in America, which are on the same principle, are now made to revolve about 5,000 times in a minute.

Twenty years ago the Waltham manufacturing company put out all their cotton yarn to weave in private families, and the cost of weaving No. 14 yarn into cloth 37½ inches wide, was from eight to twelve cents a yards, which is equal to the average price which the same goods have sold for the last five years. Now, by improvement in the *power looms*, the same cloth is wove for 5-8 of a cent a yard; and a girl will tend two looms, but occasionally three, and each loom will weave of the same quality of cloth, from forty to forty-five yards in a day of twelve hours. The improvements in spinning are even as great at this day at these factories; a girl tends 256 spindles, which will spin 1,300,000 yards, of No. 14 yarn, in a day of twelve hours, [equal to about 700 miles,] which is equal to 1,548 hanks, or 110 pounds. To do this on hand machines twenty years ago, in twelve hours, would have required upwards of 500 girls. My authority for these statements is first rate, Dr. Hobbs, the agent of the above company.

Agriculture, commerce and manufactures must all flourish together. Our usury laws have conspired to crush our agriculture, and to build up manufactures and commerce at its expense. Our usury laws have put almost an entire stop to all loans, to any but the citizen on real estate in the *country*, for any agriculture improvement. This important fact I have fully ascertained from the most intelligent sources in the city. It has combined to discourage and drive far away our farmers. Their lands will not avail. Many capitalists would loan to the farmer on real estates at fair rates, were the law repealed. Now, the whole benefit of evading the law is enjoyed by our cities, who have the more ample room and space, inasmuch as the country is excluded.

Yery respectfully your friend and humble servant,
WILLIAM KENRICK.

LINCOLNSHIRE SHEEP.

Carmel, Feb. 6th, 1837.

To Jesse Buel, Esq.—Believing that you take a deep interest in the introduction and dissemination of improved stock, &c. &c., I would remark in relation to my *Lincoln or Lincolnshire Sheep*, of which I gave you some account in my former communication. I feel very confident that this kind of sheep are much superior to any other sheep I have ever seen, and will prove a great acquisition to all the *mutton producing districts* of our country. They show a

* In the last ten years, the maclura, in our nursery, has been killed, nearly to the ground, in at least eight winters.

† The wood of the three-thorned acacia is hard, and, like the hickory, when kept dry, is liable to injured by an insect, whose ravages are termed powder-post. In the ground, or in water, it is very durable.—*Con.*

‡ Pound for pound.—*Con.*

hardiness of constitution not inferior to the South Downs, or any of our best native sheep; but in addition, more beauty of form, heavier carcass and fleece, and better quality, than the other larger breeds, common among us. As an evidence of their superior constitution, you will believe me when I state that these sheep were shipped from Hull, in England, about the first of September last; they arrived at the port of New-York about the last of October, having (as Mr. Gossip informed me) made the passage in 58 days. I saw them in two or three days after taken from aboard ship; they were in fine condition, showing no particular marks of falling off from the change they had undergone, as well as their long passage. After this they remained at New-York about two months, and the principal part of this time pent up in a small shanty at Niblo's garden; here they fell off some, from their unfavorable situation and bad management in their keep. They had thus stood on hand, on account of the great price asked for them. Except up to this time, one pair was sold to a gentleman in Virginia, another pair to a gentleman in Ohio, another pair to a gentleman in Somers, near me, at about $250 each pair, viz. buck and ewe. I have in my lot six or eight of the most choice ewes of the whole lot, and one buck, of the first choice, a sheep (acknowledged by all who have seen him, of the most competent judges) to be more splendid than any thing of the kind they have ever seen. I have quite a number of other very superior sheep of these kinds, viz. Bakewell, Leicester, &c. but my Lincolns, notwithstanding the great change they have recently undergone, are looking better under the same treatment, than any sheep I have.

I fear I have already taxed your patience too much. I have said more for the imformation of those that may inquire of you for improved sheep. I shall have only but few of my full blood Lincolns for sale this year, at least, and should not feel willing or pleased, to *sell one of them* into the hands of any man, who would not be likely do justice to them. I have obtained them at a heavy cost, and shall be satisfied to breed them only for the butcher, if the farmers will not have them. Yours, truly,

LEONARD D. CLIFT.

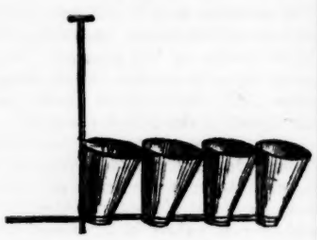
POTATO DROPPER.

Montgomery county, Md. Dec. 22, 1836.

J. Buel, Esq.—Sir—As the cultivation of the potato makes some figure in your columns, I have taken the liberty of troubling you with some account of an implement that I have used for a few years in planting my potatoes. The following figure may facilitate the explanation of it.

Fig. 1.

Fig. 2.



A. represents the staff, made of some light wood, of a size and length that may be conveniently handled by the laborer in an erect posture, the inferior end shod with metal.

B. represents the open hopper, in the shape of an inverted cone, made of tin, soal leather, or any other material that may be preferred. The one that I have used is made of the stiffest paste-board. Tin is preferable, taking care to have the circumference of the apertures, particularly the one next the earth, armed with large wire. The perpendicular side of the hopper is pinned to the side of the staff, the inferior ends of the hopper and staff being nearly even.

C. represents the rod or index, of metal or tough wood, which is inserted, at right angles, into the staff, as near the end as may be. The length of the index is determined by the distance the potato sets are to occupy in the drill or furrow.

The operator grasps the staff with his left hand, and, holding it perpendicularly, places the hopper in the furrow, resting it upon the earth, and drops the potato through it; then placing the end of the index against the potato just dropped, another is passed through it, and so on. A bag, holding about a peck, strapped over the shoulders and resting upon the breast, is what I have used for the purpose of carrying the seed.

By the use of this machine, the operator is saved the fatigue of stooping—the potatoes lie where they fall, as may be proved by dropping them through this machine on a plank floor—the distance is accurately measured by the index, and each seed has precisely the same quantity of ground to support it.

I have fancied that the potatoes dropped in this manner, have attained greater uniformity of size, than those planted in the usual mode.

Several of these hoppers might be attached together to one staff, where the sets are to stand very near together, as shown by fig. 2.

Yours respectfully, A SUBSCRIBER.

P. S. The staff of the potato dropper I have used is, upon measurement, 4½ feet in length, and the hopper a foot high, the mouth of it 8 inches in diameter, the outlet at the bottom about 2 inches. The size of the last, of course, depends upon the size of the seed. The bottom of the hopper and the index about a half inch from the lower end of the staff.

STATE AGRICULTURAL CONVENTION.

A State Agricultural Convention convened at the Capitol, on the 2d of February. Judge Pettit, of Onondaga, was called temporarily to the Chair, and J. B. Duane of Schenectady, and Dr. Spoor of Greene, appointed Secretaries pro tem. On the Secretaries registering the names of the gentlemen in attendance, the number was found to be about one hundred and fifty, and representing forty counties.

On motion of Mr. Gray of Chemung,

A committee of nomination was appointed, consisting of—

Mr. Labaugh of the	1st	Senatorial	district.
" Cash of the	2d	do	do
" J. Townsend of the	3d	do	do
" E. Smith of the	4th	do	do
" Pond of the	5th	do	do
" Gray of the	6th	do	do
" Baldwin of the	7th	do	do
" Allen of the	8th	do	do

The committee, after consultation, recommended the following officers, and their nomination was unanimously confirmed by the Convention, viz:

ANTHONY VAN BERGEN, of Greene, President.

Henry F. Jones of Queens,
John Townsend of Albany,
Andrew S. Pond of Oneida,
George Pettit of Onondaga,
} Vice-Presidents.

David Sheldon of Dutchess,
Joseph W. Richards of Washington,
Henry S. Randall of Cortland,
Hiram M'Niel of Niagara,
} Secretaries.

On motion of Mr. Viele of Rensselaer, Messrs. Pitts of the 1st, Davis of the 2d, Buel of the 3d, Richards of the 4th, Bigelow of the 5th, Patterson of the 6th, Robinson of the 7th, and Allen of the 8th district, were appointed a committee to report resolutions for the consideration of the Convention.

On motion of Mr. Buel of Albany,

A committee was appointed, consisting of Judge Spencer and J. B. Nott of Albany, and A. Walsh of Rensselaer, to examine and report on the Silk Spinner and Twister of Mr. Brooks, exhibited in the Capitol.

On motion of Mr. Allen of Erie, it was

Resolved, That Messrs. Mather and Hall, two of the State Geologists now in the city, be requested to report to this Convention, the probable benefits to the Agriculture of this State which may result from the geological surveys now in progress.

The Convention then adjourned till 4 o'clock on Friday afternoon.

Friday, February 3.

Mr. Buel, from the committee appointed to report resolutions for the consideration of the Convention, reported in part, the following:

Resolved, That in the opinion of this Convention, agriculture is the great business of the State; that upon its resources and improvements, the merchant, mechanic, manufacturer, and all other

members of society, must depend mainly, for subsistence and for wealth; and that upon the intelligence and virtue of those who manage its labors—comprising, as they do, the mass of our population—must materially depend our moral and intellectual character as a people;—

That hence it is of primary importance to all, that this great branch of labor should be specially encouraged and honored, and that the agriculturist should himself receive all those mental aids, and that stimulus to industry, which are calculated to make him more prosperous in his business, and more useful to society.

That we are now particularly admonished, by the scarcity and very high price of all the products of agriculture, to put forth our efforts to enlighten its labors and increase its productions;—

That to the Legislature of the state, as the constituted guardians of the public weal, particularly appertains the duty of fostering and improving this primary source of our wealth and happiness;—

That from the experience of the past, at home and abroad, this convention are confident, that the patronage of the government may be advantageously extended, and without detriment to the financial operations of its treasury, to this great object;—

1. By so raising the standard of instruction to the children of agriculture, as to enable them to understand, and to apply to productive labor, the best practices and improvements of the age; and,

2. By imitating the successful examples furnished by other governments, of calling forth the skill, industry and competition of our citizens, by pecuniary rewards and honorary distinctions;—

That influenced by these views, the Convention respectfully recommend to the Legislature, to appropriate a permanent fund, the interest of which shall amount to at least *thirty thousand dollars* a year, to encourage the establishment, and to sustain in usefulness, a central, and county agricultural societies, and to promote, generally, the interests of husbandry, under such regulations and restrictions as to them shall seem meet; and that provision be made by law, for introducing into our common schools, such books of elementary science, as may be best calculated to accelerate our improvements in the arts of productive labor.

Resolved, That there are many new implements of husbandry, calculated greatly to abridge agricultural labor, and to increase its products and its profits; that there are many also offered for sale, that are unworthy of public patronage; that from the difficulty, in the farmer, of determining, on superficial inspection, the relative merits of such implements, many impositions are sustained, and an injurious want of confidence necessarily exists in those which are eminently useful; that to remedy these evils, and to facilitate the more general introduction of labor-saving implements, it be recommended to the State Agricultural Society, to appoint a board of inspectors to examine, thoroughly to test, and to determine and certify, the relative merits of all new farm implements and machinery which may be presented to them for inspection; that said board comprise men of mechanical science, practical machinists, and experienced farmers; that they hold semi-annual meetings for this purpose, and that it be respectfully recommended to the legislature, to provide a reasonable compensation to the members of said board, while necessarily engaged in the duties of their appointment.

Resolved, That this convention recommend the substitution of a money, instead of a labor assessment, for the making and keeping in repair our common roads.

Mr. Viele, of Rensselaer, moved the adoption of the preceding resolutions, and went into a very able argument to show that the objects they proposed were eminently calculated to promote the great ends of free government, and to accelerate our progress in improvement and in wealth.

The resolutions were unanimously adopted, and a copy thereof ordered to be presented to each house of the legislature.

On motion of Mr. Beekman, of Columbia,

Resolved, That Judge Spencer and J. Buel, of Albany, and H. L. Baldwin, of Onondaga, be a committee to collect statistics upon the state of our agriculture, with a view of enlightening the public mind as to the causes which have led to the necessity of importing foreign wheat, rye, barley, oats & hay, for the supply of an agricultural nation.

Resolved, That J. Buel, Prof. Mather and L. C. Ball, be constituted a committee to collect facts in regard to the history and habits of the grain worm, (*tipuli tritici*) to its ravages upon our farm crops, and to the means, if any are known, of preventing its depredations; and that they be requested to report to the next Agricultural Convention.

Resolved, That J. P. Beekman, of Columbia, A. Van Bergen of Greene, J. J. Viele and A. Walsh of Rensselaer, be a committee to inquire whether, in the distribution of public moneys in aid of agriculture, a better mode can be devised, than that of giving it to county agricultural societies, to be awarded in premiums.

On motion of Mr. Ogden, of Yates.

Resolved, That in the opinion of this convention the tariff compromise of 1833, so far as regards the protection it affords to the products of our soil, ought to remain inviolate.

Resolved, That the Secretary forward to each of our representatives in Congress from this state a copy of the preceding resolution.

On motion of Mr. McCullock, of Rensselaer,

Resolved, That in the opinion of this convention, the interests of agriculture would be promoted, and the business intercourse of the country much facilitated, by the establishment of periodical *fairs*—not of exhibition merely, but for the exchange of the ordinary productions of the country; and that the design of a plan, for the introduction into this state of a system, the vast utility of which has been tested in other countries, by the experience of ages, is deserving the consideration of the Legislature, and of the agricultural interests.

Mr. A. Walsh, from the committee appointed to examine Brooks' Silk Spinner and Twister, reported.

That in the absence of Mr. Nott, Messrs. Spencer and Walsh have seen the machine in operation, and critically examined it; and that they are of opinion that it is not only a most ingenious invention, but in their judgment cannot fail of becoming eminently useful. It seems to solve the problem, which has induced great doubt, whether the culture of Silk in the United States would be profitably prosecuted, from the difficulty of good reeling of silk from cocoons, without very considerable manual instruction. The committee is satisfied, that an ingenious female can almost immediately learn to reel on Mr. Brooks' machine, in a perfect manner.

As the machine has been seen by the convention, the committee forbear to describe it particularly; but they recommend to the convention a donation to Mr. Brooks, as a small reward for the immense benefits this invention will confer on the silk culturists of this country.

On motion of Mr. Allen, of Erie,

Resolved, That we approve of "*The Farmers' School Book*," by J. Orville Taylor, and that we earnestly recommend its introduction, as a reading class-book, in all our common schools.

The following petition, signed by a number of highly respectable citizens, was then read:

To the Legislature of the State New-York:

The petition of the undersigned represents,

That a law was passed at the last session of the Legislature "to incorporate the New-York State Agricultural School, for instruction in literature and science, and improvement in scientific and practical agriculture, and in the mechanic arts:"—

That from the known utility of like schools in Europe, your petitioners believe the school contemplated by that act will tend to enlighten labor in our useful arts, to increase greatly its products, and to subserve the best interests of the state;

That they consider the plan of combining labor and study, in juvenile education, with practical instructions in the arts, particularly in agriculture, as among the great improvements of the age, calculated to increase our resources and enjoyments, and to extend and perpetuate the rule of rational freedom;—and as particularly adapted to our wants as a free people;—

That from these considerations, a portion of your petitioners have been induced to become subscribers to its stock, and not from the hope of gain, as is evidenced from their not asking, and not being permitted to take, more than five per cent upon their investment.

That they are desirous of giving to the school all the advantages which its great importance demands, and of placing its benefits within the reach of the most humble in life, and obtaining for it the countenance and support,—matters of moment to a young institution,—of the Legislature of the State;—and

That the better to enable them to carry out, as they trust, these beneficent designs, they respectfully ask of your honorable body, such an appropriation from the public treasury, to aid in the purchase of a library, apparatus, &c. as a liberal regard for the interests of the state will permit, and its resources warrant;—or

That the comptroller be authorized to subscribe, on behalf of the state, to the stock of said school.

Albany, Feb. 1*st*, 1837.

Whereupon it was unanimously

Resolved, That this convention concur in the sentiments set forth in said petition, and that it cordially unite in the prayer of the petitioners.

Mr. Mather, of the State Geological corps, read the following report:

The Agricultural Convention having requested a statement of some of the advantages which may probably result to the agricultural, and other interests, from the geological survey of the state now in progress, I will proceed to sketch a slight outline.

When we look around upon the surface of our country, we are apt to conclude that the materials forming it, are arranged without any regularity or order; but it is not so. The laborious investigations of the geologist and mineralogist have demonstrated, that there *is a regular order in which these aggregate masses of strata called formations*, are super-imposed upon each other, and this order is never inverted.

Another fact of equal importance is, that certain mineral substances are most constantly associated with each other, and also, that they are found in particular kinds of rocks.

The geologist, guided by these facts, in traversing any district of country, knows what mineral substances and rocks will probably be found. He is thus guided in his search for coal, valuable ores, salt, gypsum, limestone, for marbles, for lime and hydraulic cement, and all the various minerals and rocks which can be applied to useful purposes.

Geology thus serves to point out the geographical positions in which particular minerals may be expected, and geological investigations serve to trace out the particular localities, so that the public may reap the benefit.

The geologic l survey now in progress, has made such developments of our rich and varied mineral resources, as will serve to introduce various new branches of industry, afford new fields for profitable employment and investment of capital, and add a new impulse to the rapidly growing prosperity of the state.

Another important object of the survey will be to undeceive the public mind in relation to the numerous fruitless researches for coal. silver, gold, tin, lead, &c. which are so often sought in the bowels of the earth where there is not even a *probability* that they will be found. Hundreds of our fellow-citizens have been duped by the interested motives of a class of ignorant men, who pretend by mineral rods, and other means, to have the power of discovering valuable metals. In these persons, some of our citizens have placed such implicit confidence, that their whole estates have been expended ere they have repented of their credulity. The mining mania along the Hudson is for finding coal, and it has very frequently been announced, that valuable beds had been discovered. In some instances companies have been formed, and explorations made, but every instance which has come under my observation was fruitless, and any well informed or practical geologist would have said at once, on seeing the place, that there was no indications sufficient to justify the expenditure of even a single dollar.

It is believed that in the valley of the Hudson alone, enough had been expended in fruitless mining enterprises to defray the whole expense of the geological survey.

The landholder and farmer are perhaps more interested in the investigations of geology than any other classes of the community, and it is a matter of great importance to them to estimate correctly, not only the *agricultural value*, but the *mineral wealth* of their lands.

The farmer, perhaps, may suppose, that geological investigation and science have little to do with agriculture: if so, he is in error. The examination of soils, (which, except the wash from hills, rivers, &c. result from the decomposition of the *subjacent materials*,) is one of the most important of all the economical applications of geology. The applications of geological science have not unfrequently converted barren wastes and stagnant marshes into fruitful fields. Examples have been so numerous that it is deemed unnecessary to mention any in this brief sketch.

In regard to the economical application of geology to the agricultural interests of the first Geological District, I must beg leave to refer to the "Geological Report," which will be published under the authority of the Legislature, as it would be improper for me to mention them before its appearance. In that report, this and other subjects connected with agriculture are discussed more extensively than is practicable, while preparing this hasty article: numerous suggestions have been made in regard to improved methods of cultivation, and new manures, and varied application of those now in use have been recommended.

Although our soils now yield millions to our farmers, yet, they are capable of much higher cultivation; and our deposites of ores, salt, gypsum, limestones, marbles, granites, peat, marl, &c. productive as they already are, have scarcely begun to yield their rich and productive harvests. Comparatively few of their localities have yet been brought to the view of the public eye.

A knowledge of some of the applications of geology are of the highest importance to the engineer in the construction and location of public works, such as roads, bridges, aqueducts, canals, rail-roads, public edifices, fortifications, breakwaters, &c.

The applications of geology are of so great economical importance to every class of our citizens, that it is not only hoped that such a knowledge of this subject as will be practically useful may be generally diffused through the community, by means of our schools, academies, and colleges; but that a department will be created in the proposed agricultural college or school, in which the applications of chemistry, mineralogy, geology, &c. to agriculture, mining, metallurgy, and the arts, shall be thoroughly and systematically taught.

I have mentioned metallurgy, mining and the arts in connection with the applications of the science, because, it is mainly owing to improvements made in them, that agriculture, civilization, and the arts have progressed to their present improved states.

New-York has made a more liberal appropriation for the objects of the geological survey than any other state, and if the results be worth any thing to the community, they will be of infinitely more value than the amount expended, and it is probable that the revenues arising from the additional transport on our rail-roads and canals, will, in a single year, more than compensate for the whole appropriation.

In preparing this article I have had time only to glance, without much order, at a few of the many important advantages which will result from the geological survey; but it is confidently believed, that if it be carried on with that minuteness of detail, which is necessary to the development of our rich and varied resources, as great an impulse will be given to the general interests of the state, as has been by the Erie canal; and New-York, in this project, as well as in that, will have the credit of having been guided by the most liberal and enlarged views of state policy, and of having set an example worthy of imitation by others.

On motion of Mr. Baldwin, of Onondaga,

Resolved, That the thanks of this convention be tendered to Messrs. Mather and Hall, for their report, and that a copy be requested for publication.

On motion of Mr. Allen, of Erie,

Resolved, That Green's Straw Cutter, manufactured by J. D. Shuler, and exhibited in operation to the members of this convention, be recommended to the farmers of the country, as an article perfect of its kind, and of great economy in feeding farm stock.

The convention then adjourned to 7 o'clock in the evening.

7 *o'clock*, *P. M. Feb.* 4.

On motion of Mr. Allen, of Erie,

Resolved, That the State of New-York, powerful in resources and in enterprise, as she is great in territory and population, is eminently qualified to excel in her agriculture, and in the wealth and intelligence of her husbandmen; and that it is therefore incumbent on her legislature, with the ample means now at their command, to call forth this new source of greatness, by a liberal provision for her agricultural institutions.

Upon this resolution, which was cordially and unanimously adopted, very able speeches were made by Mr. Allen, Mr. Ball of Rensselaer, Mr. Cheever of Albany, Mr. Baldwin of Onondaga, Mr. Shuler of Niagara, Mr. Beekman of Columbia, Mr. Richards of Washington, Mr. Randall of Cortland, &c.

On motion of Mr. Beekman, of Columbia,

Resolved, That the exhibitions made to this convention, of silk fabrics and thread, made from the indigenous mulberry of our country, affords ample evidence that the silk culture is admirably adapted to our soil and climate, and that nature has bountifully supplied us, should foreign resources fail, with an excellent material for its prosecution.

On motion of Mr. Randall, of Cortland,

Resolved, That the several gentlemen who have addressed this convention, be requested to furnish a copy of their remarks to the convention for publication in the Cultivator.

Resolved, That the publishers of newspapers in this state, friendly to agricultural improvement, be respectfully solicited to give publicity to the proceedings of this convention.

On motion of Mr. Viele, of Rensselaer.

Resolved, That it be recommended, that an agricultural convention be convened at the City Hotel in Albany, on the first Thursday of February next, at 10 o'clock, A. M.; that the several counties in the state take proper measures to be represented therein, and that the secretaries of this convention cause timely notice thereof to be given in the public papers.

The convention then adjourned *sine die*.

J. W. RICHARDS, *Publishing Secretary.*

ANNUAL MEETING
OF THE
NEW-YORK STATE AGRICULTURAL SOCIETY.

At a meeting of the New-York State Agricultural Society, held at the Capitol in the city of Albany, February 3, 1837, ARCHIBALD McINTYRE, President, took the chair.

On motion of Mr. J. P. Beekman, the following preamble and resolution were adopted:

Whereas, since the last meeting of the New-York State Agricultural Society, it has been deprived, by the death of the Hon. J. B. YATES, of Madison county, of one of its most efficient and talented members—one of its earliest friends and most liberal patrons—whose zeal in behalf of this society was more or less manifested upon every proper occasion, and of whose intelligence we could and did so largely avail ourselves at the last annual meeting: therefore,

Resolved, That, entertaining a high sense of the character of the Hon. J. B. YATES, our late member, we order the above preamble and accompanying resolution to be recorded as among the proceedings of this society, and that a copy be forwarded by the secretary, to the widow of the deceased, as an evidence not only of the estimation in which we held our late member, but of our sympathy for the loss of her excellent husband.

On motion,

Resolved, That Joel B. Nott, Jesse Buel, Henry Burden, John P. Beekman and Anthony Van Bergen, be constituted a Board of Inspectors, to examine, thoroughly to test, and to determine and certify, the merits of all new farm implements and machinery which may be presented for their examination; and that the members of the said board be requested to meet semi-annually, at such time and place as the chairman shall appoint, to examine and test the implements which may be offered for their inspection.

On motion,

Resolved, That the treasurer forward to the members of this society, a statement of the amount due from them respectively, and request payment.

On motion of Mr. Walsh,

Resolved, That a committee of three be appointed to inquire into the necessity and importance of an increased attention to horticulture and the household arts, as intimately connected with the improvement and promotion of agriculture, and that they report at the next annual meeting of the society.

Whereupon, the following persons were appointed to be said committe:—Messrs. Alexander Walsh, John J. Viele, and John Keyes Paige.

On motion of Mr. Beekman,

Resolved, That Jesse Buel, L. Chandler Ball, and W. Aug. S. North, be a committee to collect statistical facts in relation to the culture of the beet and the manufacture of sugar therefrom, and that they report at the next annual meeting of the society.

On motion of Mr. Buel,

Resolved, That Messrs. Ambrose Spencer, John B. Duane and John Keyes Paige, be a committee to collect statistical facts in relation to the silk business, and that said committee be requested to report to the society at their next annual meeting; and further, that the said committee make inquiry as to the adaptation of the indigenous mulberry for the production of silk.

On motion of Mr. Duane,

Resolved, That a committee be nominated to wait on the joint committee of the two houses of the Legislature, in relation to so much of the Governor's Message as relates to the distribution of the surplus revenue, to request them to delay their report to the Legislature until the joint views of the State Agricultural Society, and State Convention can be presented to them.

Whereupon, Messrs. John B. Duane, J. P. Beekman, Anthony Van Bergen, and the President and Secretary were appointed said committee.

On motion,

Resolved, That a committee of five be appointed to nominate suitable persons as officers of the society for the ensuing year.

Whereupon, the following persons were appointed:—Messrs. Allen, Buel, Van Bergen, Baldwin and Randall.

The nominating committee having reported, the society proceeded to the election of officers for the ensuing year, and the following persons were duly elected:—

JOHN P. BEEKMAN, *President*,
ANTHONY VAN BERGEN, *First Vice-President*,
W. AUG. S. NORTH, *Second* do.
ARCHIBALD McINTYRE, *Third* do.
HARVEY BALDWIN, *Fourth* do.
JESSE BUEL, *Corresponding Secretary*,
JOHN KEYES PAIGE, *Recording Secretary*,
CALEB N. BEMENT, *Treasurer*,
JOHN TOWNSEND,
ALEXANDER WALSH,
JAMES McNAUGHTON,
JESSE BUEL,
HENRY D. GROVE,
} *Executive Committee.*

On motion of Mr. North,

Resolved, That committees be appointed, whose business it shall be to report at the next annual meeting, the progress of improvement in *Neat Stock*, *Horses*, *Sheep* and *Swine*, together with any information they may be able to obtain, interesting to the Agricultural interest generally, relating to those subjects.

Whereupon, the following persons were appointed to be said committees:—

On Neat Stock—Messrs. Francis Rotch, John P. Beekman, and W. Aug. S. North.

On Horses—Messrs. Lewis F. Allen, John C. Stevens and Cadwallader D. Colden.

On Sheep—Messrs. Henry S. Randall, John B. Duane, Henry D. Grove, Caleb N. Bement and Francis Rotch.

On Swine—Messrs. Jesse Buel, John J. Viele and Caleb N. Bement.

On motion of Mr. Shuler,

Resolved, That a committee of three be appointed to report the condition of the several county agricultural societies, to the corresponding seretary, as opportunity may occur.

Whereupon, J. D. Shuler, Henry S. Randall and L. Chandler Ball were appointed said committee.

On motion of Mr. Allen,

Resolved, That the proceedings of this society be published in the three agricultural papers published in this state, and in such other papers as are favorable to the agricultural interests.

On motion,

Resolved, That the executive committee report at the next annual meeting of this society.

The annual address to the society was then delivered, by Prof. James McNaughton.

On motion of Mr. Beekman,

Resolved, That the thanks of the society be presented to Dr. James McNaughton, for his very excellent and instructive address, and that a copy be requested for publication.

On motion of Mr. Allen,

Resolved, That the thanks of this society be tendered to the late president thereof, for the able and satisfactory manner in which he has presided over the same.

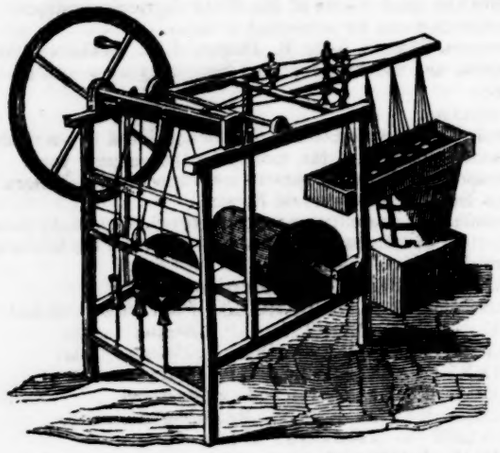
The society then adjourned.

There are three things to beware of through life. When a man is young, let him beware of his appetites; when middle aged, of his passions; and when old, of covetousness particularly.—*Confucius.*

Justice consists in doing injury to no man; decency, in offending none.—*Tully.*

The strongest symptom of wisdom in man, is his being sensible of his own follies.—*French.* We do not correct our follies until we are sensible they are such.

BROOKS' SILK SPINNER AND TWISTER.—Fig. 3.



This machine, the cut of which came to hand after our paper was made up, is noticed in the proceedings of the State Agricultural Convention, in the communication of Judge Spencer, and in an editorial article. It is worth millions to American Silk Culturists.

GLOSSARY OF CHEMICAL TERMS.

[As it is tedious to give explanations of terms in chemistry, when they occur, and as they are not always understood by the reader, we give a glossary of terms most in use, which may be referred to at pleasure. The *names* of most of the compounds denote the substances of which they are composed.]

Absorption, the conversion of a gaseous fluid into a liquid or solid.

Acetates, salts formed by the combination of any base with the acetic

Acetate of lead, sugar of lead. [acid.

Acids, compounds of bases with oxygen, hydrogen, &c.

Acetic acid, concentrated vinegar.

Æther, a volatile liquor formed of alcohol and an acid.

Alkali, fixed, or fossil, or mineral, soda.

Alkali, vegetable, potash.

Alkali, volatile, ammonia.

Alum, a compound of sulphuric acid, alumine and potash, or ammo-

Alumine, earth of alum; pure argillaceous clay. [nia.

Anthracite, coal containing no bitumen.

Areometer, a graduated glass instrument with a bulb, by which the specific gravity of liquids is taken; an hydrometer.

Affinity, a force by which substances of *different* kinds unite.

Argillaceous, of the nature of clay.

Alcohol, rectified spirits of wine.

Alluvial, depositions of soil made by water. [fusions.

Aroma, the odor which arises from certain vegetables, or their in-

Azote, nitrogen; the basis of atmospheric air, of ammonia, nitrous acid, &c. [pheric pressure.

Barometer, an instrument which shows the variation of the atmos-

Bell-metal, an alloy of tin and copper.

Brass, an alloy of copper and zinc.

Calcareous, partaking of the nature of lime.

Caloric, the chemical term for the matter of heat.

Caloric, free, radiant heat, or that which is not in chemical union with other bodies. [perceptible.

Caloric, latent, the matter of heat in a state of combination; not

Carbon, the base of diamond and of charcoal.

Chalybeate, a term applied to mineral waters impregnated with iron.

Carbonic acid, carbon combined with oxygen.

Citric acid, the acid of lemons.

Cohesion, a force inherent in all the particles of bodies, by which they are prevented from falling to pieces.

Carbonate of lime, the compounds of carbonic acid and lime, under the names of limestone, marble, calcareous spar, chalk, &c.

Carbonate of potash, common potash; pearlash; salt of tartar.

Concentration, the act of increasing the specific gravity of bodies.

Decomposition, separation of the constituent principles of compound bodies.

Effervescence, an intense motion which takes place in certain bodies caused by the escape of a gaseous substance.

Efflorescence, the pulverulent form of saline bodies by exposure to the air, in consequence of losing their water of crystallization.

Elements, properly, are the simple constituent parts of bodies, incapable of decomposition, or further division.

Essences, the essential oils obtained by distillation from odoriferous vegetable substances.

Evaporation, dissipation of fluids by heat; evaporating fluids into vapor by heat.

Fermentation, a peculiar spontaneous motion, which occurs in vegetable substances, if exposed to proper temperature, under certain circumstances. It is usually divided into the acetous, vinous and putrefactive stages.

Fluidity, a term applied to all liquid substances. Solids are converted into fluids by combining with a certain portion of caloric.

Gas, all solid substances, when converted into permanently elastic fluids by caloric, are called gases.

Gelatine, a chemical term for animal jelly.

Gluten, a vegetable substance allied to gelatine.

Gravity, that property by which bodies fall to the earth.

Gravity, specific, is the weight of any solid or fluid body, compared with the *same measure* of distilled water.

Gallic acid, the acid found in gall nuts.

Hydrates. Those substances which have formed so intimate union with water, as to solidify the water, and render it one of its component parts, are called hydrates.

Hydrogen, the base of water; inflammable air.

Hydrate of lime, lime slaked with water.

Hydrometer, see areometer.

Incineration, the burning of vegetables for the sake of their ashes.

Laboratory. A room fitted up with apparatus for the performance of chemical operations.

Lute, a composition for closing the junctures of chemical vessels, &c.

Lime, quick-lime; calcareous earth; oxide of calcium.

Maceration, softening a solid body in a fluid, without impregnating the fluid with it.

Mucillage, a vegetable principle allied to gum.

Muriates, salts formed by the combination of any base with muriatic

Muriatic acid, acid of sea salt. [acid.

Malic acid, acid of apples.

Muriate of soda, common salt.

Malleability. That property of metals which gives them the capacity of being extended and flattened by hammering.

Menstruum, the fluid in which a *solid* body is dissolved.

Mineral, any natural substance of a metallic, earthy or saline nature.

Mordants, substances which have a chemical affinity for particular

Nitrate of potash, salt-petre, nitre. [colors, as alum.

Nitrates, salts formed by the combination of any base with nitric acid.

Neutral salt. A substance formed by the union of an acid with an alkali, an earth, or a metalic oxide, in such proportions as to saturate both the base and the acid.

Oxide. Any substance combined with oxygen, in a proportion not sufficient to produce acidity; rust of metals.

Oxidize, to combine oxygen with a body without producing acidity.

Oxygen, a simple substance, composing the *greatest* part of water, and part of atmospheric air; vital air.

Oxygen gas, oxygen converted into gas by caloric.

Oxalic acid, the acid found in sorrel

Pellicle, a thin skin which forms on the surface of saline and other liquids, when boiled down to a certain strength.

Pyrolignic acid, obtained from wood by burning.

Sal, salt; a class of bodies.

Sulphate of copper, blue vitriol; blue stone.

Sulphate of iron, copperas; green vitriol.

Sulphate of lime, gypsum.

Sulphate of soda, glaubers salts.

Sulphate of zinc, white vitriol.

Sulphate of potash, liver of sulphur; sulphur and potash fused toge-

Sulphate of magnesia, epsom salts. [ther.

Sulphuric acid, oil of vitriol; vitriolic acid.

Super-tartrat of potash, cream of tartar.

Subacetate of copper, verdigris.

Saturation, the art of impregnating a fluid with another substance till no more can be received or imbibed.

Silicious earths. A term used to describe a variety of natural substances which are composed chiefly of silica, as quartz, flint, sand, &c.

Simple substances, synonymous with elements; not divisible.
Smelting. The operation of fusing ores, to separate the metal from the sulphur, arsenic and other matters with which they are combined.
Solution, the perfect union of a solid substance with a fluid.
Sulphates, sulphats, salts formed by the combination of any base with sulphuric acid.
Sulphurets, combinations of alkalis or metals with sulphur.
Tartrates, salts formed by a combination of any base with the acid of tartar.
Tartaric acid, the acid found in the grape.
Torrefaction, roasting of ores.
Trituration, the pulverizing, or union of bodies by friction.
Thermometer, an instrument to show the relative heat of bodies, and of the atmosphere.
Vacuum, a space unoccupied by matter.

SHEEP HUSBANDRY.

THE SHEEP.—(*Continued from page* 149, *Vol.* 3.)

SOUNDNESS.

Soundness is intimately connected with "trueness;" it means strength of the fibre generally, and also a freedom from those breaches or withered portions to which allusion has been made.—The unassisted eye, or at least the eye of the wool-stapler or sorter, will readily detect the breaches; but the hair generally may not possess a degree of strength proportionate to its bulk. This is ascertained by drawing a few hairs out of the staple, and grasping each of them singly by both ends, and pulling them until they break.

Soundness is a very important property in wool, and was absolutely indispensable in long wool when that alone was subjected to the operation of the comb. If it broke in pieces in the act of combing, the shreds (termed noils) were useless in the worsted manufactory, and, indeed, were regarded as little better than refuse: when it is recollected that the clothing-wools are not required to possess so great a degree of strength as the old combing ones, but, on the contrary, would be less useful if they had this strength; and that now, many short wools being made to undergo the process of combing,—the sound portion of one part of the staple may be mixed with the tender fibre from another part of another fleece, and, possibly, even a denser pile may be raised on the surface of the cloth. There is, however, a limit to the tenderness of that clothing-wool, which may pass muster with the manufacturer. Not only the pile may be properly broken under the operation of the card, but it may become so comminuted that it will either be driven away, dissipated by the action of the cylinders, or it may afterwards break, and the fabric of the cloth be destroyed under the beating of the fulling-mill.

The wool of sickly or murrain sheep is generally not only finer than in a healthy sheep of the same breed, but it possesses this tender quality, not to be detected by the eye, nor even by the microscope; unless that it may be suspected by a slighter degree of polish, and not having so full and round an appearance.

Age has often much effect in deteriorating the fleece. The yolk lessens in quantity after the sheep, and especially the ewe, is six years old; and, to the decrease of the yolk, there soon follows a hard, inelastic, unyielding character of the wool, that renders it useless for several purposes for which the younger, and especially the wether-wool, is sought. Mr. Luccock applies a very singular, but appropriate word, to this old ewe-wool—"it dies in the bowl"—it sinks in the water in which it is washed—and acquires there a shrivelled and dead-like appearance. It is difficult to spin, and it materially injures the manufacture in which it is employed.

The wool often becomes considerably injured by felting while it is on the sheep's back. This is principally seen in the heavy breeds, especially those that are neglected and half-starved. It generally begins in the winter season, when the coat has been completely saturated with wet; and it increases until shearing time, unless the cot separates from the wool beneath and drops off. The *cotting* of wool is only an injurious extension of the process of felting—the wool forms into a hard thick knot that can scarcely ever be unravelled.

Some breeds are more subject than others to this defect: the Morfe sheep and the Cheviots have been especially accused of possessing this harling property in the wool. It occurs before the wool has begun to separate from the skin; but then by its weight, and the manner in which it acts on the portion below, the wool begins to be gradually detached from the back and connected only by a few scattered hairs, while a new crop grows underneath.

Collections of a similar kind are frequently seen under the ears of long and fine-haired spaniels.

Mr. Parkinson speaks of two diseases, or rather defects of wool. The first he calls a *feathery* wool, set very thinly upon the pelt, and falling very closely together. "When shorn it laps up in very small bundles, and weighs heavy, according to its substance, but the whole fleeces are of light weight; it also is weak and curled, and breaks much in combing." This, with his wonted prejudice against the improved Leicesters, he affirms to be the usual character of their wool.

The other defect he calls *watery* wool,—"it is so full of grease that it looks damp; and a stranger to this kind of wool would be assured that it had been wetted, and the proper smell of the wool will alone undeceive him." This wool, according to him, is frequently seen on the coarse Lincolns. He says that this *watery* wool is a very bad sort, and on poor sheep is frequently cotted, and at all times is of an objectionable quality for the manufacturer.

Wool is generally injured by keeping. It will probably increase a little in weight for a few months, especially if kept in a damp place; but after that it will somewhat rapidly become lighter, until a very considerable loss will often be sustained. This, however, is not the worst of the case; for, except very great care is taken, the moth will get into the bundles and injure and destroy the staple; and that which remains untouched by them will become considerably harsher and less pliable. If to this the loss of the interest of money is added, it will be seen that he seldom acts wisely who long hoards his wool, when he can obtain what approaches to a fair remunerating price for it.—*Library of Useful Knowledge, Farmers' Series.*

Young Men's Department.

HINTS TO YOUNG FARMERS.—No. V.

CULTURE OF THE MIND.

You know well, that one piece of land, a garden for instance, yields vastly more than another piece of ground of equal natural fertility. And you know equally well, that one man abounds more in knowledge and usefulness, than another to whom nature has been alike bountiful. It is culture—it is the industry and perseverance of man, exerted in one case, and not in the other, that produces the marked contrast in both. The cultivator is sure to be rewarded, in his harvests, for the care and labor which he bestows upon his soil; and the reward is no less certain to him who devotes his leisure hours to the culture of his mind. The soil administers to our animal wants. Knowledge not only greatly assists in supplying these wants, but is the primary source of intellectual wealth, which dollars alone cannot give, and, when consorted with good habits, tends to refine, elevate and distinguish men above their fellows. Talent is not hereditary. You will see, on looking around, that most of the distinguished men of our country have sprung from humble or obscure parentage. They are indebted for present distinction to the culture which they have themselves bestowed upon their minds. The road to usefulness and honorable distinction is equally open to you, and the time has arrived when you must decide, whether you will compete for the noble prize.

If you wish to be prosperous in your business—to know, and to profit by, the improvements of the age—cultivate your mind—for this is the great labor-saving machine. If you wish to see your children intelligent, thriving and respected, teach them, by example, to cultivate the mind. If you would be useful to your friends, and merit the confidence and esteem of your neighbors, seek early to qualify yourselves for the duties of social life, by the culture of the mind. If you aspire to intellectual enjoyments, which flow from the study of the material world—from the order, harmony and beauty, which meet us in every walk, in the manifold and wonderful works of the Creator—cultivate the mind. In fine, if you would prosper in your business, in your family and in society, cultivate the mind.

But knowledge is not always wisdom; and therefore, be as scrupulous in regard to your studies, as you are in regard to the seed which you deposit in the soil. You will reap whatever you sow; and the mind is as liable to be cumbered with weeds as is the soil.

Read, therefore, whatever tends to instruct you in your business, to establish in you good habits, and to fit you for the responsible duties of life. Acquaint yourselves with the inventions and improvements of modern art. "Make yourselves acquainted with the general facts of science, with the wondrous laws by which the Almighty governs all around us; and with the endless illustrations of these laws, in the world and in all its parts. The facts of natural history will afford abundant matter for agreeable and useful knowledge. The plants, the animals, the minerals, the soils, of your country and of other countries; the changes of the seasons; the make and composition of all that surrounds you, duly observed, and made the subject of reading, of conversation, of reflection, will at once store your mind, and raise your ideas of the wisdom and goodness of Him, who, it will soon be perceived, has made all things 'by number, weight and measure.' The study of your own frame, your bodily make and constitution, may be made an object at once of interest, instruction and benefit. Early may you be brought to perceive, in the very constitution of your own bodies, much of your duty enjoined by Him who formed you such as you are. Temperance, self-government, moderation, avoidance of all abuse of the body, are written in the very make of the body itself. And it will hence plainly appear, that when our Maker says, abstain from all intemperance, from all impurity, he does but say, "Do thyself no harm." "Who aims at excellence will be above mediocrity; who aims at mediocrity will fall short of it."

HINTS ON DIET.

"An ounce of prevention is better than a pound of cure."

A reasonable indulgence in the abundant supplies of nature, converted by art to the purposes of wholesome food, is one of the comforts added to the maintenance of life. It is an indiscriminate gratification of our tastes, regardless of the consequences that may ensue from it, that is alone blameable. But so great is our general apathy in these respects, that even on the occurrence of diseases, from which we are all more or less sufferers, we scarcely ever reflect on our diet, as the principal, if not the sole cause of them.—We assign them to weather, to infection, to hereditary descent, to spontaneous breeding, as if a disease could originate without a cause; or to any frivolous imaginary source, without suspecting, or being willing to own, mismanagement of ourselves.

We derive the renewal of our blood and juices, which are constantly exhausting, from the substances we take as food. As our food, therefore, is proper or improper, too much or too little, so will our blood and juices be good or bad, overcharged or deficient, and our state of health accordingly good or diseased.

By aliment, or food, is to be understood whatever we eat or drink, including seasonings, such as salt, sugar, spices, vinegar, &c. every thing, in short, which we receive into our stomachs. Our food, therefore, consists not only of such particles as are proper for the nourishment and support of the human body, but likewise contains certain active principles, viz. salts, oils, and spirits, which have the properties of stimulating the solids, quickening the circulation, and making the fluids thinner; thus rendering them more suited to undergo the necessary secretions of the body.

The art of preserving health, and obtaining long life, consists in the use of a moderate quantity of such diet, as shall neither increase the salts and oils, so as to produce disease, nor diminish them, so as to suffer the solids to become relaxed.

It is very difficult, almost impossible, to ascertain what are the predominant qualities either in our bodies or in the food we eat. In practice, therefore, we can have no other rule but observing by experience what it is that hurts or does us good, and what it is our stomachs can digest with facility, or the contrary.

The eating too little is hurtful, as well as eating too much. Neither excess, nor hunger, nor any thing else that passes the bounds of nature, can be good to man.

By loading the stomach, fermentation is checked, and of course digestion impeded; for the natural juice of the stomach has not room to exert itself, and it therefore nauseates its contents, is troubled with eructations, the spirits are oppressed, obstructions ensue, and fever is the consequence. Besides, that when thus overfilled, the stomach presses on the diaphragm, prevents the proper play of the lungs, and occasions uneasiness in our breathing. Hence arise various ill symptoms and depraved effects, enervating the strength, decaying the senses, hastening old age, and shortening life. Though these effects are not immediately perceived, yet they are certain effects of intemperance; for it has been generally observed in great eaters, that, though from custom, a state of youth, and a strong constitution, they have no present inconvenience, but have digested their food, suffered surfeit, and borne their immoderate diet well, if they have not been unexpectedly cut off, they have found the symptoms of old age come on early in life, attended with pains and innumerable disorders.

If we value our health, we must ever make it a rule not to eat to satiety or fulness, but desist while the stomach feels quite easy. Thus we shall be refreshed, light and cheerful; not dull, heavy, or indisposed. Should we be tempted to eat too much at one time, we should eat the less at another. Thus, if our dinner has been larger than usual, let our supper be less, or rather, quite omitted; for there is no man, however careful of his health, who does not occasionally transgress in this way.

These studies are as food to us in our youth—they delight us in more advanced years—they are ornaments to a prosperous state—they afford us comfort and refuge in adversity—they amuse us at home—they are unembarrassing to us when abroad—they pass our nights with us—they accompany us in our travels, and in our rural retirement.—*Cicero.* Coming from such authority, what a strong incentive this passage should be to all young persons, to cultivate their minds, by application to literary pursuits.

The COMMON SCHOOL ASSISTANT, a monthly publication of eight quarto pages, conducted by J. ORVILLE TAYLOR, and devoted to the improvement of Common Schools and the education of teachers, is published at No. 71 State-street, at fifty cents per annum, in advance.

POSTSCRIPT.

The demands upon us for information in regard to Stock, Implements, Italian (Siberian) Spring Wheat, Dutton Corn, and other seeds; and in regard to agricultural matters, have crowded upon us to such an extent—twenty having come to hand in the last forty-eight hours, requiring twenty letters in answer—that we have turned over to our friend BEMENT those upon stock, and to W. THORBURN, our honest seedsman, those upon implements and seeds generally. There is at present no spring wheat (Siberian) in market, though a supply is expected before the Hudson opens. The Dutton corn, already ordered, will be forwarded as soon as the navigation will permit. The queries upon agricultural matters will receive our best attention as early as our more pressing business will permit. We shall designate an agent, or agents, in the different states as soon as our returns will enable us to do it understandingly. In the mean time, we give the following:—

Thomas P. Jones, Patent Office, Washington, D. C.	W. F. Reddick, P. M. Sunbury, N.C.
J. Dille, Newark, Ohio.	John R. Bryant, Shawnee Run, Ky.
G. M. Lewis, Scott's Ferry, Va.	J. Blain, Marksborough, N. J.
Gen. B. Peyton, Richmond, Va.	R. S. D. Jones, Friendship, Md.
Alex. Cowan, Annapolis, Md.	J. R. Palmer, Jackson. Mich.
D. Shiffer, P. M. Shepherdstown, Pa.	B. R. Greene, Warwick, R. I.
	S. Hinkle, New Market, Va.

RECEIPTS.—We have received payments for the number of subscribers indicated below, from the 20th Jan. to 20th Feb. inclusive. Numbers under ten not noticed.

POST-OFFICES.		POST-OFFICES.		POST-OFFICES.	
Abington, Va.	33	Hadlyme, Con.	11	Passumpsic, Vt.	22
Benevola, Ky.	11	Hamptonburgh, Or.	11	Rose Mills, Va.	11
Belleville, Pa.	22	Hampstead, Va.	11	Richmond, Va.	11
Branchport, Yates,	11	Keene, N. H.	11	Somers, Westches.	20
Black-Rock, Erie,	24	Leonardstown, Md.	11	Shawnee Run, Ky.	11
Brownsville, Pa.	11	Lenox, Mass.	11	Sandy Spring, Md.	11
Brinkleyville, N. C.	10	Lewisburgh, Pa.	11	Skaneateles, On.	11
Bristol, Con.	15	Lima, Liv.	22	St. Louis, Mo.	22
Berlin, Rens.	11	Leesville, Scho.	11	Savage, Md.	11
Brooklyn, Mich.	11	Meadville, Pa.	11	Same Creek, Md.	22
Church Hill, Md.	13	Mattox Bridge, Va.	11	Somerville, N. J.	13
Centerville, Md.	11	Murfreesboro', Ten.	22	Shrewsbury, N. J.	11
Chaptico, Md.	11	Middletown, Va.	22	Scott's Ferry, Va.	22
Chestertown, Md.	11	Milton, Del.	11	Sublett's tavern, Va.	11
Cheshire, Con.	11	Madison, N. J.	11	Sculltown, N. J.	11
Castleton, Vt.	11	Marksboro, N. J.	33	Sunbury, N. C.	11
Cassville, One.	11	New Store, Va.	11	Shepherdstown, Pa.	22
Coxsackie, Greene,	11	New Milford, Con.	15	Trumansburgh, Tom.	33
Danville, Pa.	22	New-York,	20	Taneytown, Md.	11
Deckertown, N. J.	11	Newmarket, Va.	22	Union, Vt.	11
Duanesburgh, Schen.	36	Newbern, N. C.	14	Uniontown, Ohio,	13
Erwin, Steu.	11	Newark, Ohio,	11	Windham, Con.	15
Ellery, Chaut.	11	Oakhill, Greene,	11	West Bloomfield, Ont.	17
Frederick, Del.	11	Oxford, Chen.	30	Wilton, Con.	11
Friendship, Md.	35	Ogden, Mon.	33	Warwick, Or.	11
Fishkill, Dutch.	22	Ovid, Sen.	22	West Rutland, Vt.	12
Great Mills, Md.	11	Pr. Edward c. h. Va.	11	Westport, Ky.	11
Greenwich, N. J.	44	Port Tobacco, Md.	11	Warwick, R. I.	22
Govenstown, Md.	22	Port Deposite, Md.	11	Warsaw, Gen.	50
Garysville, Va.	11	Phelps, Ont.	11	Yorktown, Westch.	11

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